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A DESCRIPTIVE ANALYSIS

OF THE

ORGANIZATIONAL CLIMATE FOR QUALITY

AT THE

NATIONAL NAVAL MEDICAL CENTER

BY

WYNETT A. ISLEY

LIEUTENANT, MEDICAL SERVICE CORPS, U.S. NAVY

JUNE 1991

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RUNNING HEAD: QUALITY CLIMATE

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ABSTRACT

The Navy Medical Department began fostering the Total Quality culture in the summer of 1989 by setting a strategic course of action with its senior leadership. A review of the professional literature suggested that senior leadership commitment was a prerequisite for a successful organizational transformation to the new paradigm of Total Quality. The descriptive survey method of research was selected for this project. The Quality and Productivity Self-Assessment Guide for Defense Organizations was used to measure the existing perception of the senior leadership of a selected Navy medical treatment facility regarding the climate for Quality within their organization. Several methods were suggested to institutionalize the above average Quality climate. By documenting the status quo with a standardized survey instrument, future researchers were provided a baseline measurement against which to test the nature and extent of progress in the Quality transformation. It was recommended that the Self-Assessment Guide be administered on a regular interval as an index of the climate for Quality.

CHAPTER ONE

INTRODUCTION

This paper is organized into six chapters. Chapter One contains a review of the conditions which prompted this study, a statement of the management problem, a review of the literature which considered the nature and effect of the perceptions of senior leadership on an organizational Quality transformation, and the purpose of this study. Chapter Two describes the method of research, provides an explanation of the measurement instrument, and describes the manner of data analysis. Chapter Three consists of analyses and presentation of the data, with appropriate discussion in Chapter Four. Chapter Five contains the summary, conclusions, and recommendations of the study. The final chapter provides a list of referenced materials, and includes the tables, figures and appendices.

CONDITIONS WHICH PROMPTED THE STUDY

Background

The Navy Medical Department must be able to demonstrate progress in the implementation of Total Quality. Although the Department of Defense is required by Executive Order to implement Total Quality Management, Congress reduced the 1990 Department of Defense Appropriations for Total Quality Management implementation efforts because Congress saw no way to track the progress of the implementation of a "philosophy" (U.S. Congress, 1989). And, as an element of the Department of Defense, the Navy and, likewise, the Navy Medical Department must implement the philosophy of continuous improvement, that is, Total Quality.

The United States has entered a global economic age in which continuously improving the quality of every product and service is rapidly becoming an essential fact of life. This focus on Quality has been predicted to be the key to remaining at the forefront of any industry (Boeing, 1990). Other authors predict that Total Quality is

the executive's key to survival (O'Halloran, 1989).
The federal government and other service industries
have begun adopting this new management philosophy
of continuous improvement.

Following the implementation of a Federal
Productivity Improvement program in 1986, President
Reagan issued a series of Executive Orders which
the Office of Management and Budget (OMB) supported
with various OMB directives. In April 1988, OMB
Circular A-132 was promulgated; it connected
quality improvement with productivity and
established continuous improvement as a federal
management principle (Appendix A). The highest
managerial levels of the Navy Department supported
the philosophy of continuous improvement even
before it became federal policy (Zentmyer and
Krieger, 1991). The Department of Defense
established the Defense Productivity Program Office
to support the Total Quality initiative. The
Secretary of the Navy established an Executive
Steering Group in 1989. The Navy Executive
Steering Group formed a vision statement for the

Navy and developed the needed committee structure.
When Admiral Frank B. Kelso, II became the Chief of
Naval Operations (CNO), his recommended reading
list included the continuous improvement philosophy
classic Kaizen by Imai among the strategy, history
and leadership texts. The new CNO published an
adapted version of Deming's fourteen points for
management as applied to the Department of the Navy
(Appendix B).

The Department of the Navy has begun the
cultural transformation to this continuous
improvement oriented style of leadership. This
emerging leadership style has been in use by the
Navy at certain shore installations since the mid
1980s. Total Quality Leadership, as it is
currently called in the U.S. Navy, is what Admiral
Kelso wants practiced from the top down. Although
the motivation to participate in the Total Quality
transformation is typically based on a management
perception of crisis and potential economic
collapse, the United States Navy is not subject to
the same global market economy. Base closures and

budget deficits not withstanding, the Navy and
Marine Corps are not on the verge of organizational
collapse. In fact, in a recent interview, Admiral
Kelso said that he has instituted Total Quality
Leadership in a "superior organization with
enthusiastic, well-trained dedicated people"
(Kelso, 1991). Continuous improvement has become
the underlying theme of Total Quality Leadership in
the Navy and in the Navy Medical Department.

Implementation

The implementation of Total Quality Leadership
has been the number one priority of the Navy
Surgeon General since the late 1980s. Management
concepts drawn from the writings and lectures of W.
Edwards Deming have been in use in various sections
of the U.S. Navy since 1984 (Zentmyer and Krieger,
1991). The customer orientation and emphasis on
quality improvement as the primary means for
improved organizational effectiveness embodied in
the Deming management concepts have provided the
senior leadership of the Navy medical department
with sufficient impetus to undertake the cultural

change necessary for this new way of managing. At the 1989 Surgeon General's conference for commanding officers of naval medical installations, Total Quality Leadership was presented as the future of Navy Medicine (Zimble, 1990). At this conference, senior leadership of the Navy Medical Department pledged their commitment to this new way of doing business.

Implementation of this cultural transformation requires training and commitment at all levels of the organization. An effective Total Quality training plan should cover principles and concepts of total quality, statistical methodology skills, group development skills, and knowledge about changing organizational culture (Greebler and Suarez, 1989).

The implementation of Total Quality should be highly flexible and tailored to the specific organizational culture. It is the behavior of management, the senior leadership, that will establish the necessary organizational climate for the Quality transformation. According to

researchers at the Navy Personnel Research and Development Center, it is possible to predict potential success of Total Quality implementation efforts. They identify top management motivation and commitment as the number one factor to be considered in predicting successful Total Quality implementation (Greebler and Suarez, 1989).

Moving Total Quality from a concept to a reality requires the commitment of top management (Nackel, 1991). The concept of Total Quality has been adopted by many organizations and industries throughout the United States. Each has tailored the process to fit the unique characteristics and climate or culture of that organization. However, regardless of the culture of the organization, the various Total Quality initiatives have shared these basic characteristics: 1) customer orientation, 2) leadership responsibility for Quality, 3) improvement as a continuous process, and 4) total involvement of everyone in the organization (Deming, 1986; Feigenbaum, 1988; Naval, 1989). The construct of leadership commitment as it relates to

the successful implementation of Total Quality is the focus of this paper.

Barriers

Building a Total Quality culture in any organization is a leadership challenge that far exceeds the routine requirements of day-to-day management (Deal, Kennedy and Spiegel, 1983). The basic culture of an enterprise is shaped by the products and services the organization provides. In order to develop a service oriented culture, management must provide the model. The commitment of senior leadership to the philosophy of total quality must be reinforced by the daily actions and behavior of management. The employees' capacity to provide high quality service is directly related to the quality service they receive as internal customers of management (Albert, 1989).

Top management must be committed to the need for this change in philosophy. It can be safely presumed that the senior management of a bureaucracy, such as the Navy Medical Department, reached their high level in the organization by

exhibiting behaviors that were supported by the paradigms of the past. The literature indicates that the world view of tomorrow's leaders must be transformed to a new commitment to total quality if the organization is to meet the demands of the future. This commitment to quality will be reflected in their attitude toward the features of total quality. Measurement of this attitude would provide an objective means of predicting the successful transformation to the new paradigm.

However, the true and honest attitude of individuals toward Quality may be subtle and difficult to discern. There may be a reluctance on the part of many individuals to give vocal expression to their feelings and attitudes on controversial or negative matters. Fear of retaliation or reprisal may result in a chilling effect on open discussion of any shortcomings or areas of deficiency within the organization. Another consideration in attitude measurement is that an individual may temper the sharing of potentially unacceptable opinions and attitudes to

avoid confrontation or embarrassment. According to
Thurstone and Chave (1929,p.7),

> " if (he) is not intentionally
> misrepresenting his real attitude on a
> dispute question, he may nevertheless
> modify the expression of it for reasons
> of courtesy, especially in those
> situations in which frank expression of
> attitude may not be well received."

Naval Medical Department leaders are socialized
into a corporate culture that requires them to be
loyal to their seniors as a matter of tradition and
discipline. Suggesting improvements to existing
processes may be interpreted as suggesting that
their seniors are not performing in an optimal
manner. Such suggestions could be labeled
insubordinate or disloyal. However, within the
military organizational culture, there is an
acceptable method to report a perceived deficiency
in the system. In the official report of a
presumed deficiency, the corporate culture requires
an accompanying solution or proposed remedy. In

other words, any one may point out organizational
deficiencies to the extent to which that individual
has an idea of how to improve the situation, or
knows what should be done instead of maintaining
the status quo. Without profound knowledge of the
intricacies of the process in question, a well-bred
officer may be reticent to complain because without
profound knowledge, a comprehensive solution or
remedy is not self-evident. The total quality
concept of process teams is a viable solution to
this dilemma.

To further complicate the factors which may be
barriers to the successful implementation of the
new philosophy of continuous improvement, human
nature toward change of any sort must be addressed.
Resistance to change is a well-documented human
condition and should be anticipated in even the
most committed leaders. Edwards (1957) stressed
that an individual may have both positive and
negative attitudes associated with the same object.
Senior leadership may be committed to total
quality, yet still have misgivings about its

implementation. Because of this, suggestions for

improvement may be withheld. On the other hand, an

experienced individual is familiar and somewhat

comfortable in the status quo, and may focus on the

negative aspects involved with the proposed change.

The effects of the change may be unknown,

undesired, or, at a minimum, unfamiliar. It is a

human trait to be cautious about change, to be

resistant to change. The supposition of how

proposed changes will negatively impact us, and the

inclination to keep things the way they are, is not

unique to the modern era. As Shakespeare penned

for Hamlet, "we'd rather bear those ills we have

than to fly to others we know not of."

Leadership and Quality Climate

Senior Leadership attitude toward their

organizational climate for quality is often

reflected in their day-to-day actions. Navy

Medical Department leaders have committed

themselves to the total quality philosophy. These

healthcare managers agree that quality is the key

to the future. However, in a recent survey, less

than half of the healthcare executives surveyed
were confident that their own organization had
created the proper environment or organizational
climate in which quality work can flourish (Powers,
1988). The senior leadership of a Navy Medical
treatment facility influences the organizational
climate by its day-to-day actions. If the
organizational climate, as perceived by the senior
leadership, has become favorable for a Quality
transformation, then the actions of these senior
leaders will further enhance that Quality climate
and have significant impact on the successful
implementation of Total Quality initiatives.
Because the senior leadership of an organization
sets policy and, in many cases, dictates process
within that organization, these leaders have
control over the organizational climate.
Therefore, it was deemed desirous to assess the
existing status of the senior leadership's
perception about their organizational climate for
Quality.

STATEMENT OF THE MANAGEMENT PROBLEM

Research is usually motivated by the existence of a problem. Formal problem statements and their accompanying hypotheses advance scientific knowledge by helping the investigator confirm or disconfirm theory (Kerlinger, 1986). Scientific knowledge about Total Quality in the healthcare industry is largely restricted to anecdotal writings and experiential reports. And, although the Navy Medical Department is training its leadership in Total Quality tools and techniques considered essential to successfully meet the challenges of the future, there is no scientific measurement of the status quo. The literature review which follows in this chapter indicates a generally accepted relationship between the commitment of senior management and the eventual success or failure of their organizational transformation into the new Quality paradigm. It can be safely presumed that the senior leadership of the Navy medical department reached their high standing in the organization by exhibiting

behaviors that were supported by a particular paradigm. The literature indicates that the world view of successful leaders must be reshaped, transformed to a new paradigm with a focus on Total Quality, if the organization is to successfully meet the changing demands of the future.

If Navy medicine follows the pattern of other industries as reported in the literature, the successful implementation of Total Quality will be dependent on the commitment of the senior leadership to transform the organizational culture. Their attitude and perceptions about the Quality climate of the organization will be the key predictor of success. Because the literature suggested that the commitment of senior management is a prerequisite to the Quality transformation, it appeared logical to assess the perceptions of the senior management of a selected Navy medical treatment facility toward the Quality climate of their organization.

The management problem: What is the current
perception of Navy Medical Department leaders
toward the Quality climate in their organization?

REVIEW OF THE LITERATURE

Introduction

Much has been written about the current focus on Quality. The professional literature and the popular press contain numerous references to the global emphasis on Quality. For the purposes of this paper, the literature was reviewed to provide a frame of reference for the study of the shift in managerial paradigms to Total Quality. Specifically, the literature was reviewed for the role of organizational leadership in the transformation, and the nature and effect of the organizational climate for Quality on that transformation.

One of television's most successful and historic documentaries was aired on June 24, 1980. Lloyd Dobyns was the narrator of NBC's "If Japan Can...Why Can't We?" The documentary was about the rise of industrial productivity in Japan as compared to the decline of the United States as an economic world power due to poor quality workmanship and high costs. In the final fifteen

minutes of the broadcast, Dobyns featured a
relatively unknown statistician and management
theorist who lived in the heart of Washington, D.C.
and who had been instrumental in the Japanese
industrial revolution. During the televised
interview, this statistician, Dr. W. Edwards
Deming, described his work in Japan which resulted
in the Japanese using statistical methods to give
the world "the products of statistical control of
quality in a form that the world never saw before"
(Walton, 1986). When Deming assured Dobyns that
the same methods would work in the United States,
he was asked why Americans were not using these
distinctly successful methods. Deming's reply:
"there's no determination to do it. We have no
idea what's the right thing to do. [we] have no
goal." (Walton,1986,p.19). According to Deming,
"the biggest problems that most any company in the
Western world faces...are self-inflicted, created
right at home by management that are off-course"
(Walton,1986,p.xii). Clearly, Dr. Deming placed
the blame for American loss of global prominence

and for organizational inefficiency squarely on the organizational management. Management was responsible for the economic survival of the organization. Yet, the Japanese were quickly surpassing the American industrial giants. How did American management get off track? Under what paradigm of management were American managers operating that allowed the United States to slip from global economic prominence?

The Scientific Management Paradigm

According to Thomas S. Kuhn, scientific development is a succession of tradition-bound periods punctuated by non-cumulative breaks. The science of management follows a similar developmental path. He writes that "investigation of a given specialty at a given time discloses a set of recurrent and quasi-standard illustrations of various theories in their conceptual, observational, and instrumental applications. These are the community's paradigms, revealed in its text books, lectures, and laboratory exercises" (Kuhn, 1970, p.43).

The paradigm development of management science
is similar to other paradigms. The paradigm of
scientific management can be tracked historically
to the century following the founding of the United
States. The American continents were colonized for
economic purposes. The New World was a vast
expanse of untapped resources which the European
community needed. In the final quarter of the 18th
century, the United States of America declared its
political independence. However, with only an
agricultural base to support its economy, the newly
formed United States lacked the broad manufacturing
base necessary for true economic independence.
Therefore, after the Revolutionary War, the leaders
of this fledgling nation moved rapidly to establish
a strong domestic manufacturing base and to build
the necessary supporting domestic infrastructure.

Guilds, the prevailing European system of
managing for quality, were present in the early
United States. Production workers were taught the
skills of a particular trade during an
apprenticeship under the tutelage of a master

craftsman. The guild concept ensured that manufactured goods met the needs of the customer and the quality standard of the trade. The master craftsman inspected the work of the apprentice or journeyman to assure the quality of the final product; the master ensured that the work met specifications. As shops grew larger to meet the demands of a burgeoning economy, a full time inspector replaced the master craftsman in this quality assurance function (Juran and Godfrey, 1990).

The training of a journeyman craftsman was an arduous process requiring years of apprenticeship. The United States needed to expand its economic base more rapidly than the guild system allowed. Immigration to the freedom of America brought a large, willing work force ready to do its best to support the economic base. Yet, in the flood of immigrants was a mere trickling of master craftsmen. The schools were not especially useful in providing the training required. Language was a barrier to training because few immigrants could

read or write in English. Still others were
fundamentally illiterate even in their native
language. The shortage of skilled craftsmen
coupled with the plenitude of unskilled laborers
yielded fertile ground for the emergence of a new
manufacturing paradigm.

Frederick W. Taylor, often called "the father
of scientific management," was engaged in the new
field of industrial engineering. Taylor proposed a
management paradigm to support the revolution which
was reshaping the manufacturing industries. This
new science of management separated the management
function of planning from the work force function
of production. Production and individual
productivity were increased by scientifically
designing production tasks in a manner which
allowed these repetitive production tasks to be
performed by semi-skilled or unskilled laborers.
The knowledge and experience of the increasingly
rare master craftsmen were analyzed by specially
trained industrial engineers. Together, the
craftsmen and the engineers planned the work

production processes for execution by the abundant,
unskilled work force. The Taylor system of
management greatly increased manufacturing
productivity. The guild system faded from
prominence. The United States, with its abundant
natural resources, quickly became the most
productive nation in the world. With limited
global competition, American management became
focused on productivity; quality was second
priority.

The inspection approach to quality was
consistent with the scientific management paradigm.
However, by identifying defects at the end of the
process, the quality inspectors added
administrative complexity to the organization
without adding any value. Defective items were
returned for rework if possible. Otherwise, these
defective products were sorted out as waste, a
complete loss to the organization.

By the late 1940s, industrial quality control
was a science unto itself. Sophisticated

statistical techniques were applied to the
manufacturing inspection process. Shewhart, a
statistician at the Bell Telephone Laboratories,
made the observation that the same part produced by
a single operator on a single machine was likely to
show a normal variation over time (1925).
Understanding variation as an ordinary occurrence
in manufacturing led to the development of several
basic statistical tools such as run charts, control
charts, cause and effect (Ishikawa) diagrams, and
pareto charts (Garvin,1988). The Shewhart
Plan-Do-Check-Act wheel of process improvement was
introduced as an early statistical quality control
tool (Shewhart, 1931), and is an integral part of
the continuous improvement process used today by
the Hospital Corporation of America.

It is clear that American industry was not
unfamiliar with statistical quality control. These
scientific methods were in common use by the
inspection departments of the manufacturing
industry. During World War II, the United States
economy was placed on a war footing with limited

manufacture of civilian goods. After the war, with
the destruction of the European industrial base and
the devastation of the entire Japanese culture, the
United States was the only world power capable of
meeting the post-war industrial needs of the entire
world for manufactured goods. Mass production,
with its emphasis on high output rather than high
quality, became the renewed focus of American
industry. And, while history reflects the post-war
period as a time of American world dominance and
prosperity, it is now apparent that during the
following forty years, American industry forgot the
quality and statistical methods that had made this
dominance and prosperity possible (Seidman, 1991).
Japan began to outproduce the United States in
selected markets with high quality goods and was
quickly becoming a leading global economic power.

The 1980 NBC documentary on the Japanese
industrial transformation marked the beginning of a
shift in managerial paradigms. Shocked out of
their complacency, even large, bureaucratic
organizations such as Xerox and IBM have begun the

move into the strategic aspects of Total Quality.
Once these giants of industry made the shift to
Total Quality, the new practices moved from the
sidelines, the "fringes," to center stage and
quickly became the new ideal to emulate (Kanter,
1989).

The Paradigm Shift to Total Quality

Members of a profession learn their trade by
studying and practicing solved problems and proven
techniques. Kuhn (1970) continues his discourse on
the priority of paradigms by reminding us that
while observers may agree that a "new" theory has
produced an apparently permanent solution to a
group of outstanding problems, they may still
disagree about the particular abstract
characteristics that make these solutions
permanent. That is, they agree on the
identification of a paradigm without agreeing on a
full interpretation or rationalization of it.
Kuhn's ideas are clearly applicable to the recent
revolution in management science to the new
paradigm of "Total Quality."

Many writers, management consultants, and chief executive officers of varied industries accept the need for a total quality focus. The specific application techniques vary with the particular industry and author, and with the organizational values and culture. The literature contains some inconsistency in the recommended emphasis areas and the particular intervention strategies. Crosby says quality is free in 1979, then focuses on the role of management in the quality process in his later work (1984). In 1964, Joseph Juran introduces a new concept of the manager's job, and, in 1989, publishes an executive handbook on leadership for quality. Kaouru Ishikawa's guide to quality control is translated into English in 1982; he later publishes an English language text to explain total quality control (1985). Masaaki Imai tells us "kaizen" is the key to success under the new paradigm (1986). Despite the various approaches to total quality advocated

by recent authors, there is consistency across the board which demands a fundamental paradigm shift to the Total Quality philosophy of management.

The functions of management were previously characterized into the categories of planning, organizing, staffing, directing, coordinating, reporting and budgeting. Gulick and Urwick categorized the prevailing and recommended management style as "control," while the new paradigm of management calls for "cooperation." The new focus on total quality calls for managers who are prepared to lead their organizations in quality planning, quality improvement, and quality control (Juran, 1988). The modern management experts who concern themselves with the new quality include such notables as Juran, Deming, Ishikawa, Feigenbaum, Crosby, and others. They make the point repeatedly that the job of management is to focus on improving the processes in which people work. Senior management assures the economic survival of the organization and provides the leadership necessary for improving quality (Deming,

1986; Juran, 1989). According to Ishikawa (1982, 1985), if managers are to lead the quality . transformation they must learn the fundamentals. These fundamentals include the meaning of quality with its emphasis on the customer and the role of process; the sponsorship and encouragement of teams to improve processes; and the meaning of statistical thinking and its link to appropriate management action.

Total Quality is a difficult concept to understand because it is so broad and complex. Additionally, each part of an organization has its own views as to the meaning of total quality (Snee, 1990). The development of systems for achieving total quality is a management responsibility. The senior leadership of an organization must engage in statistical thinking at the concept level in order to create these systems. According to Snee, the scientist in the statistics community at the operational level tends to view statistical thinking from a "tool" viewpoint with little focus at the concept level. It is the role of management

to draw from the tools used at the operational level and build systems of statistical process control at the managerial level. The management system is the aligning link between the strategic direction of an organization and its related operational activities. The Snee model of Total Quality (Figure 1) includes tools, systems, and strategic key ingredients to achieve total quality. One of the ingredients key to the successful implementation of Total Quality is management leadership (Snee, 1990).

The managerial paradigm of total quality includes a particular emphasis on statistical thinking. However, a renewed emphasis on statistical quality control is only part of the new paradigm. Statistical methods alone are not enough. There must be a bedrock philosophy of management with which statistical methods are consistent. Deming developed his famous "Fourteen Points" to reflect just such a broad philosophy. Deming's fourteen points of management, according to the 1986 Walton book, The Deming Management

Method, and the 1986 Deming book, Out of the
Crisis, are provided as a rudimentary set of
philosophical guidelines (Appendix C).

Each organization must develop its own
adaptation of Deming's fourteen points, an
adaptation which is suitable to its particular
corporate culture. The Navy Medical Department is
under the influence of the corporate culture of the
United States Navy, as well as the cultural
idiosyncrasies of the American healthcare industry.
As explained earlier in this chapter, the CNO has
published a Navy adaptation of Deming's fourteen
points. This Navy interpretation of the total
quality fundamentals for management were reviewed
in the "conditions which prompted the study"
section of this paper. Gillem (1988), Naval (1989)
and others have interpreted the fourteen points as
they apply to the field of hospital quality and the
healthcare industry.

Additionally, the Deming philosophy has been
successfully applied in such diverse enterprises as

the Ford Motor Company, Campbell Soup Company,
Florida Power and Light, American Telephone &
Telegraph, and several metropolitan alliance groups
(Walton, 1986). Successful implementation of the
Total Quality philosophy is a noteworthy
accomplishmer..

As an acknowledgment of this accomplishment,
the United States government, a proponent of this
new management philosophy, established a national
award for quality. The United States Department of
Commerce, National Institute of Standards and
Technology, issued scoring guidelines for the
United States National Quality Award (1989).
Batalden et al (1989) suggested that those who seek
to learn the new global quality management should
draw from the Baldrige award categories to build
the necessary basic skills. An explanation of the
seven categories of the Baldrige award is provided
in Appendix D. It is noteworthy that the first
category reviewed is "Leadership." The Malcolm
Baldrige National Quality Award places strong
emphasis on the basic premise that senior

leadership is responsible for creating and
sustaining a clear and visible quality value system
along with the supporting management system to
guide all activities of the organization. Because
competition for the Baldrige award is restricted to
"for profit" enterprises, the healthcare industry
established its own Quality award. The Healthcare
Forum/Witt award is scored in categories that mimic
the Baldrige award, with leadership commitment as
the first, key category. According to its
founders, the Healthcare Forum/Witt competition is
an annual award program to honor the unified vision
and commitment of a healthcare organization
leadership team whose combined efforts provide
quality products and services. Once again,
leadership commitment to total quality is
recognized as essential to the quality
transformation.

Any organization planning the transformation
into the total quality paradigm must have a basic
understanding of the concepts, tools and techniques
which have been helpful in the quality improvement

efforts of other industries. These total quality concepts are provided here in a cursory manner only. A deeper understanding than suits the purpose of this paper is needed to successfully accomplish the actual quality transformation.

Processes and systems are the first conceptual building block in total quality. A process is defined by grouping in sequence all the tasks directed in accomplishing one particular outcome (Scholtes, 1988). Thinking in terms of processes is perhaps the most profound change that occurs during the quality transformation. When the work force begins to look at processes, the work force can develop a unified language and understanding of the relationship between tasks. Viewing work as a process facilitates the understanding that the quality of what is produced is largely determined by the quality of the input, not the dedication or skill of the individual worker. Most processes are established by the senior leadership in the corporate office. Most of the people who know what really goes on during the process are on the front

lines. Feedback and communication between the organizational levels is essential for process improvement.

The concept of customer orientation follows naturally from the concept of process. The people and organizations that precede the series of tasks identified as a process are the "suppliers," while those who follow the process, who use the product or service, are the "customers." Each worker is a customer of preceding workers; likewise, each worker has customers, the people to whom the worker passes on his work. Understanding who the customers are, and what they expect of the process is the second key concept of Total Quality.

While a single individual using the total quality methodology may be able to make process improvements, rarely does a solitary person have sufficient experience or hold a profound knowledge of all the factors involved during a process. Therefore, another total quality concept is "teams." Major gains in quality and productivity can result from a group of people pooling their

skills, talents, and knowledge (Scholtes, 1988).
With training, these process teams can develop
effective and permanent solutions to complex and
chronic problems.

The core of the total quality methodology is
the scientific approach. This approach requires a
systematic method for individuals and teams to
learn about processes. Further, the scientific
approach requires decision making based on data
rather than hunches, a search for root causes
rather than superficial symptoms, and the
development of permanent solutions to maintain the
process in a state of control rather than quick
fixes that are no more than tampering. The
scientific approach may require sophisticated
statistics, formulae, and experiments. However,
the most common quality control tools are rather
simple to learn and use (Juran, 1988; Mizuno,
1988).

Scientific tools help management and the
process action teams visualize the process,

pinpoint the problems and their causes, and
determine appropriate solutions. Table 1 provides
a simple reference chart from which to select
appropriate tools and when to use them. The most
common total quality tools are process flowcharts,
histograms, pareto charts, and Ishikawa (cause and
effect) diagrams. A brief overview of these tools
and their uses is provided in Appendix E. Two
other significant total quality tools are run
charts and control charts. An important
consideration in process improvement is whether the
process is currently under control. Variation
within limits is a natural occurrence; however, a
process cannot be improved permanently until after
it has been brought under control. One of the
total quality guidelines is "control, then
improve." A system that is in statistical control
has a definable identity and a definable capability
(Deming, 1986,p.339). The process action team can
work to improve the capability of a process only
after the process is in statistical control.

In addition to the scientific tools, the total quality methodology relies on several group dynamic techniques. With its emphasis on the team, total quality requires special knowledge and experience working in groups to develop creative ways to approach a process task (Scholtes, 1988). Three of the most common group techniques used in total quality are brainstorming, multivoting and nominal group technique. These group decision making tools, in conjunction with the scientific tools, facilitate the work of process teams toward continuous quality improvement.

The tools and techniques of total quality have been included in a multitude of management texts since the mid 1980s. The emphasis on the application of these tools and their use in various circumstances has varied with the industry under consideration and with the specific author. However, the basic concepts of Total Quality are universal. The role of the senior leadership of the organization in the design of sound processes and the use of data driven decisions is unanimously

supported as an *a priori* condition for a successful quality transformation.

Total Quality and Health Care

Lessons from business are often difficult to apply in the complex environment of health care. In the health care industry, external factors such as reimbursement issues, and the incredible rate of technological change are further complicated by the organizational culture. The corporate culture of a healthcare agency is influenced by myriad separate professional inter-dependencies of the typical health care staff with their individual professional affiliations. These professional affiliations are independent of the particular hospital or healthcare agency in which the individual healthcare provider renders service. Nevertheless, hospitals are responsible for services that are essential to society. Likewise, government agencies provide essential social services. It is crucial that these organizations perform their functions effectively and efficiently. Navy medicine holds the joint

distinction of being both a part of the government
and a member of the healthcare industry. Both of
these corporate cultures must be taken into
consideration as the Navy Medical Department
implements the total quality philosophy.

How does the statistical quality control
philosophy of Total Quality apply to a service
industry such as health care? According to Peters
and Waterman in their best-selling book, In Search
of Excellence, "controlling quality in a service
business is a particularly difficult problem.
Unlike manufacturing, in which one can sample what
comes off the line and reject bad lots, what gets
produced in service businesses and what gets
consumed happens at the same time and in the same
place" (1982,p.xvii). Florida Power and Light, a
public utility company and winner of the Deming
prize, shattered the belief that Total Quality
could be successfully applied only to manufacturing
industries. In a service industry, the processes
may be more convoluted and inter-dependent than the
processes which are typically used in a

manufacturing industry. However, there is evidence
that these service industry processes can be
brought into control and then improved using the
total quality tools and techniques (Reece, 1987).

Customer expectations of a service industry
are not entirely different than those applied to
the manufacturing industry. Service quality has
quantifiable attributes that can be measured,
controlled, and improved. These attributes include
reliability, responsiveness, competence, access,
courtesy, communication, credibilty, and security
(Garvin,1984;Inova, 1991). Reliability can be
defined as consistency of performance; an example
of this is the accuracy of billing. An example in
which responsiveness, the timeliness of service,
can be observed is in the turnaround time on
orders. Competence might be measured by the
professional credentials held by the staff.
Access, the ease of contact, is reflected in such
daily occurrences as busy signals on the telephone
and the attitude of front line contact people.
Service quality, not unlike manufacturing, can be

enhanced through the application of the total
quality methodology.

A managerial focus on quality rather than
productivity is not a recently suggested philosophy
in health care. The healthcare industry has
historically been focused on quality improvement.
The process of modern patient care requires the
coordination of the efforts of many healthcare
professionals and allied support staff. The
outcome as perceived by the patient and the
providers is dependent upon the process applied to
the situation, and is clearly influenced by the
inputs to the process. Avedis Donabedian,
considered by many to be the "Father of quality
assurance" in health care, has written extensively
on the intricacies of quality in health care
(Donabedian,1966,1972,1980,1982,1983,1986,1988).

Florence Nightingale, one of the original
hospital administrators, called for an
industry-wide use of statistics in health care. By
comparing uniformly reported statistics, the health
care industry would have the information necessary

to assess "the relative value of particular
operations and modes of treatment" and a
quantifiable means "to improve the treatment and
management of the sick and maimed" (1863,p.176).

In 1912, Codman began an "end-result"
assessment in an effort to improve health care. By
relying on objective measures of outcome whenever
possible, Codman's published results provided a
valid industry benchmark for comparison. This
highly influential report provided a useful
potential solution to the problems of hospitals in
that era (Codman, 1914).

Medical auditing by scientific methods was
developed by Lembcke in the 1950s. He stressed the
importance of developing state-of-the-art criteria
for quality care (Lembcke, 1956). His emphasis on
the need for explicit and objective measures of
quality was a precursor of the best patient care
evaluation methodologies in use today (Ostrow,
1983).

In 1986, the Joint Commission on the
Accreditation of Healthcare Organizations committed

itself to a major project that became known as the
Agenda for Change. The intent of this project was
to create a "performance-based accreditation
process intended to stimulate continuous
improvement of the quality of care provided in
health care organizations" (O'Leary, 1990). The
plan began with a fundamental paradigm shift to
performance based standards that assess whether a
healthcare organization effectively accomplishes
its objectives.

And, in September 1987, the National
Demonstration Project on Quality Improvement in
Health Care, funded by the John A. Hartford
Foundation, under the sponsorship of the Harvard
Community Health Plan, teamed 21 leading health
care organizations with consultant experts in
modern quality improvement from some of the leading
companies, academic departments and consultant
firms in the country. The project teams of the
National Demonstration Project discovered that

modern quality improvement methods could help solve problems identified in health care setting (Schlosser,1990).

The generally accepted standard for the delivery of health care has traditionally been a "scientific and caring manner" (Gillem, 1988). The new demand is for quality health care to be provided at best value. This focus on measuring and improving the quality of care is a shift from the generally accepted, and still widespread, practice of attempting to "assure" quality (Reece, 1987). The responsibility for quality improvement rests squarely on the leader, on management. Deming believes that leaders are doing their proper jobs only when they improve the processes and systems that are used to add quality, to increase value, and to improve service to the customer (1986). Until health care leaders understand how their customers, the patients, physicians and purchasers of health care, measure and define the

quality of that healthcare service, the leaders will fall short in the new paradigm of total quality (Gillem, 1988).

These changes in the paradigm of healthcare management are rapidly moving this service industry into the global total quality philosophy. In the recently published report on the first year of the National Demonstration Project for Quality Improvement in Healthcare, real world examples of the application of total quality methodologies are testimony to these pardigm changes (Berwick, Godrey and Roessner, 1990). While some traditionalists may see these changes as "too far, too fast," other observers see them as "too little, too late" (Kanter,1989,p.42).

Navy Medicine and Total Quality

In 1990, the U.S. Navy Bureau of Medicine and Surgery became a member in the Quality Management Network of the National Demonstration Project on Quality Improvement in Health Care. An integral responsibility of participation in the Quality Management Network was providing leadership for

others by sharing lessons learned. Through this
membership, the Navy Bureau of Medicine and Surgery
was identified as a leader in the growing efforts
to transform the United States health care industry
using quality management principles (Schlosser,
1990). In fiscal year 1990, the Navy Surgeon
General listed his first goal as: "to engender the
total quality leadership culture" in Navy medicine.
At the January 1991 conference of all the Navy
medical department flag officers, the set of nine
strategic goals which they developed included the
implementation of Total Quality Leadership
(Appendix F). How does one know whether the
quality improvement transformation has occurred, if
the new paradigm is in place?

Navy Medicine is practiced in nearly 500
healthcare delivery sites which range from tertiary
care, teaching facilities to single technician
branch medical clinics. Almost four billion
federal dollars are spent to support Navy Medicine;
one third in the direct care system, one third for
care provided under the CHAMPUS program, and the

final third in military pay. The direct care
system provided nearly 13 million outpatient
visits, over 207 thousand admissions, nearly 20
million prescriptions and over 21 thousand births
in fiscal year 1990 alone (Zimble, 1990). If Juran
was correct in his assumption that as much as 30
per cent of an organization's resources are wasted
in non-value-added processes (Juran, 1988), the
successful application of Total Quality to Navy
medicine would theoretically result in tremendous
tax savings. It has been projected that the
Department of the Navy beneficiary population which
is eligible for health care benefits will reach
nearly three and one-half million individuals by
fiscal year 1996 (NMDSC,1989).

Continued cuts to the defense budget and
federal hiring freezes, as well as the foreboding
anticipation of cuts in military end strength, will
place Navy Medicine in the same dire straits as the
civilian health care industry. Federal health care
programs share many of the problems facing the
private health care sector. The Navy Surgeon

General realized that continuous quality improvement, embodied in the Total Quality philosophy, was a way to build toward optimum use of increasingly scarce resources in the face of increasing competition for those resources (Zimble, 1990).

The decision was made to commence the journey toward total quality as a whole system, rather than one facility at a time. A system-wide effort, guided and directed from the top, was implemented in line with the findings of most experts that the drive to continuous improvement and total quality must be a top-down effort. The necessary cultural change could only be facilitated by the actions of the senior leadership. The flow of this process is depicted in Figure 2. The senior leadership of the Navy medical department had to be trained for their new role of management in a total quality culture.

Training for Total Quality Leadership

The Navy medical department demonstrated its organizational commitment to Total Quality through the establishment of the Naval Medical Quality

Institute. The staff of the Naval Medical Quality Institute were directed to provide training, consultation, and research in the application of Total Quality in the Navy health care system. The focus of the Institute's efforts was to provide assistance to the field as each facility embarked on the journey to total quality. In 1990, with further refinements in 1991, the staff of the Naval Medical Quality Institute developed several courses to train Navy health care leaders in the philosophy, tools and techniques of total quality. One of the courses was specifically targeted toward the top echelon of management in each facility.

During three days of intensive training, the senior leadership of a command is provided the fundamental knowledge necessary to begin a quality transformation in their command through the implementation of Total Quality Leadership. The Upper Management course is only the beginning of the total quality journey (Figure 3). During these three days, the senior leadership of the organization learns that Total Quality Leadership is

a commitment to quality through prevention rather
than inspection; that Total Quality Leadership is a
systems approach which explores the
interdependencies of organizational processes. The
Upper Management course provides powerful tools and
techniques to enable the leaders to make reliable
and valid assessments of internal processes. These
assessments provide robust, objective support in
order to facilitate managerial decisions regarding
"what to work on." Participants are taught that, as
health care leaders, they must establish the
structure, membership and specific responsibilities
of cross-functional process action teams; and that
they must create an environment that encourages
everyone to get involved in the quality
transformation. These senior leaders are reminded
that they must continue their self-education until
they possess profound knowledge of their
organization and its processes. An outline of the
Navy Medical Department Senior Management Total
Quality Leadership course objectives is provided in
Figure 4.

The Role of Leadership in the Quality Transformation

No operational definition can ever express the
rich and diverse aspects of "leadership." Research
reported in the Ohio State and Michigan leadership
studies categorized leaders along two axes: concern
for production, and concern for people. While the
managerial focus on continually improving quality is
expected to lead to higher production, it is also
true that the total quality methodology has an
equally strong emphasis on the work force,
especially when formed into process action teams.
In the Total Quality paradigm, individual excellence
is necessary but not sufficient for a successful
quality organization. A corporate responsibility
emerges which requires that senior leadership
facilitate the performance of the entire team. This
new paradigm of leadership would be a (9,9) leader
as described by the Ohio State and Michigan
continuum (Figure 5). This leader is committed to
providing the necessary organizational climate that
supports the work force and results in high
productivity. Leadership commitment to total

quality is one of the factors which impact on the organizational climate. The variables which contribute to a healthy organizational climate for quality are themselves influenced by the commitment of senior leadership. The literature consistently provides the de facto requirement that the commitment of senior leadership is an essential prerequisite for a quality transformation in an organization. Scientific studies of the relationship between leadership and effective organizational quality improvement have not been found to date. The relation may, in fact, be spurious or fortuitous. The determination as to whether the role of leadership is dependent upon some sort of metaphysical explanation which is not amenable to scientific investigation has not been tested, and is beyond the scope of this paper. However, the effect of leadership on the culture or climate of an organization is a prima facie relationship that is generally accepted as valid.

The Organizational Climate for Quality

The senior leadership of an organization sets
the pace for the rest of the work force. By
establishing the organizational climate, the senior
leadership creates the self-fulfilling prophecy of
organizational success or failure. The senior
leadership creates and defines the strategic focus
of the enterprise. Such a well-defined strategic
focus is necessary for a successful quality
transformation (DoD Task Force, 1986). This
strategic focus provides the constancy of purpose
required by Deming's fourteen points for management
(Deming, 1986). Additionally, the strategic focus
provides a vision for the future, a goal that
transcends the day-to-day operations (Sink, Das &
Coleman, 1987). Supporting the strategic focus are
the organization's Quality policy and philosophy.
Inherent in this strategic plan are the value
systems and ethics of the enterprise (U.S.Department
of Commerce, 1989). Each of these are essential
features of the organizational climate for quality.

Top management must be individually and
personally involved in the Quality transformation

(Deming, 1986; Gitlow & Gitlow, 1986; Mann, 1986; Scherkenback, 1986; Walton, 1986). The criteria for scoring applicants for the Baldrige award are heavily based on the personal involvement of the senior leadership of the organization (U.S. Department of Commerce, 1989). The visible commitment of senior leadership to the stated goals and objectives of the organization is an important feature of a successful organizational climate for quality (Somers, Locke & Tuttle, 1985). The senior leadership creates the systems and structure of the organization. These systems, properly developed, enhance the accomplishment of high quality with high productivity (U.S. Department of Commerce, 1989).

The senior leadership of an organization guides the work force to the accomplishment of the objectives of the enterprise. Therefore, the work force must be aware of the quality and productivity issues (U.S.Department of Commerce, 1989). The systems of rewards, punishment and other consequential constraints are established by senior leadership and serve to reinforce desired on-the-job

behaviors. The attitude, morale and cooperation of
the work force are greatly influenced by the
behaviors and actions of senior leadership (Somers,
Tuttle & Locke, 1987). The work force is another of
the factors which contribute to the organizational
climate for quality.

A solid customer orientation is a basic tenet
of the Total Quality methodology (Deming, 1986;
Gitlow & Gitlow, 1986; Mann, 1986; Scherkenback,
1986; Walton,1986). This customer orientation is an
essential element of the organizational climate for
quality. Burstein and Sedlak (1988) include
customer orientation as a necessary element of the
federal productivity improvement effort. The lack
of a true customer orientation in American industry
has been reported by many authors (Albert, 1989;
Zemke, 1989). A 1986 study found that fully
twenty-five percent of customers were sufficiently
dissatisfied with the level of service in the
average American company that they would stop doing
business if a better alternative could be found
(Zemke, 1989). Nearly forty-five percent of the

respondents in a study of the service sector rated the service at these agencies, which included lawyers, dentists and hospitals, as "fair" or "poor." Obviously, any effort to improve quality that fails to improve customer satisfaction is pointless (Imai, 1986).

Finally, the manner in which these features of the organizational climate for quality are transferred from senior leadership to the entire work force is itself a feature of the organizational climate for quality. The communications of the organization are a key feature of a successful quality transformation (Burstein & Sedlak, 1988). Peters reminds us that the members of an organization require information to do their jobs (1987,p.504-511). The processes and system for communicating information are critical to the successful quality transformation.

In summary, the organizational climate for quality can be measured along five variables: strategic focus, leadership and management, work force, customer orientation, and communications.

The perception and attitude of the senior leadership toward these dimensions of the organizational climate will have an impact on the resultant climate and, consequently, on the organizational quality transformation. This relationship is the basis of the descriptive analysis which is the purpose of this paper.

Summary

A review of the literature showed that the attitude of American industry toward Quality had traditionally been subjugated to the demand for high levels of production. In the recent past, successful organizational leadership has been changing from a focus on production to a renewed focus on Quality using scientific, statistical tools and techniques combined with group dynamics skills. Successful Quality transformation in any organization has required visible commitment by senior leadership. It was demonstrated in many industries that the Quality transformation was facilitated by the involvement and commitment of the senior leadership of that organization. While it

was generally accepted that the attitude of senior management toward total quality was key to a successful transformation, the literature did not reveal any scientific or otherwise quantitative studies on the attitude of any population of senior leadership toward their organizational climate for Quality. It appeared that such features as Strategic Focus, Leadership and Management, Work Force, Customer Orientation and Communications were constructs of the organizational climate for quality. The accompanying attitude of senior management toward these climate features were suggested as precursors and predictors of the organizational climate for quality and the successful quality transformation of an organization.

PURPOSE OF THE STUDY

The objective of this study was to measure the attitudes of the senior leadership of a selected Navy medical treatment facility toward their organizational climate for quality. The purpose of this descriptive analysis was to facilitate an assessment of current practices, policies, procedures and attitudes throughout the organization as they relate to quality improvement. Additionally, the findings of this study would serve as a baseline reference point from which to focus future managerial intervention efforts to enhance the organizational climate for quality.

A review of the professional literature suggested that the commitment of senior leadership was essential for the successful implementation of Total Quality, and that the climate for quality was the result of the actions of the senior leadership of the organization. While not explicitly measured by this study, the nature of the organizational climate for Quality is anticipated to determine the nature and extent of the transformation of Navy

medicine into the Total Quality paradigm. This

relationship in depicted in Figure 6.

CHAPTER TWO

METHODS AND PROCEDURES

Introduction

When the Navy Medical Department began its journey to Total Quality in 1989, there was no measurement of the status quo. Without the collection of objective data, there was no scientific means to assess the nature and extent of any change in the organizational climate for Quality. Without a baseline measurement, the Navy Medical Department did not have the capacity to monitor any trends or demonstrate any progress. Anecdotal data were collected in an informal manner as a preliminary attempt to demonstrate progress in the Quality transformation. Quantitative measurement of the status quo was deemed essential to provide baseline data for future research. The descriptive survey method of research was selected for this study. According to Van Dalen (1962, p.212), a descriptive study that obtains "factual information about existing status enables members of the profession to make more intelligent plans about

future courses of action." Good (1963,p.244)

proposed that:

"descriptive studies may include

present facts or current conditions

concerning the nature of a group of

persons, a number of objects, or a

class of events, and may involve the

procedures of induction, analysis,

classification, enumeration, or

measurement. The terms *survey* and

status (italics in the original)

suggest the gathering of evidence

relating to current conditions."

Baseline data on the perception of senior

leadership regarding the organizational climate for

Quality were collected by means of a general

purpose productivity and quality self-assessment

tool. Factors considered in this selection were:

the size of the population of senior leadership,

the desire for anonymity of the respondents, and

time limitations. Specific permission for use of

the survey instrument for this project was not

necessary. The Quality and Productivity Self-Assessment Guide for Defense Organizations was developed for internal use by all levels in the Department of Defense (Denslow, 1990). The Self-Assessment Guide is a government tool, and is not copyrighted or otherwise restricted in its use by defense organizations.

The population of this study was the senior leadership of the National Naval Medical Center, Bethesda, Maryland. Senior leadership was defined as those individuals reporting directly to the hospital commander. According to the organization manual (Appendix G), the senior leadership of the National Naval Medical Center included, by title: Director for Hospital Administration, Director for Medical Services, Director for Surgical Services, Director for Ancillary Services, Director for Nursing Services, Director for Occupational and Community Healthcare Services, Director for Base Operations, Director for Financial Management, Director for Supply Management, and the Director for Pastoral Care (NNMCINST 5450.1, 1990). In

addition, there were several Special Assistants

included because they reported directly to the

Commander. These Special Assistants included: the

Executive Assistant; the Command Master Chief;

the Deputy Equal Employment Opportunity Officer;

the Public Affairs Officer; a representative of the

American Red Cross; a representative of the command

Inspection, Control and Review office; the staff

Judge Advocate General, a legal advisor; a

representative of the Naval Medical Doctrine

Center; the Planning Officer; the Command

Ombudsman, the spouse of a staffmember; a

representative of the Navy Relief Society; the

Safety Officer; the Comptroller, who was also the

Director for Financial Management; the Civilian

Personnel Officer; the Chaplain, who was also the

Director for Pastoral Care; and the Composite

Health Care System Project Officer.

Scope and Limitations

The National Naval Medical Center and the

Naval Medical Quality Institute were geographically

near the author's residency site, thereby greatly facilitating the collection of Quality climate data. Random and informal observation of the senior leadership of the National Naval Medical Center by the author during her residency served as empirical validation of the collected responses. Participation by the senior leadership was completely voluntary. No personal identifiers were used in data collection. Return of the completed survey instrument was determined sufficient to indicate willingness to participate. No coercive techniques were used. The protection of human rights was assured through the use of anonymous responses. Individual privacy and other ethical considerations were reviewed and protected during this project.

The decision to study the Quality climate of the National Naval Medical Center, the Navy's flagship hospital, was made, in part, to document the status quo of senior leadership perception of the Total Quality Leadership initiative.

The possibility of the study participants
answering the questions in what was deemed an
organizationally acceptable manner and, thereby,
masking their true attitudes was acknowledged.
However, the anonymity of data collection and the
voluntary participation in the survey process by
the respondent may have mitigated this effect.
Human errors in use of the instrument were
recognized as a remote possibility.

The Instrument for Data Collection

A general purpose productivity and quality
self-assessment tool developed by the Defense
Productivity Program Office through a contract with
General Research Corporation (Contract MDA
903-88-C-0267) was used to determine the perception
of selected Navy medical department senior
leadership toward the organizational climate for
Quality. This self-assessment tool was reportedly
developed using established private and public
sector models (Somers, Roullen and Hsiao, 1989).
These models provided existing questions and scales
which were classified and sorted into the taxonomy

depicted in Figure 7. Senior management
involvement was a recurrent item in existing
quality and productivity assessment instruments
such as the TRW Productivity Self-Evaluation Model,
the WCPI Diagnostic Survey, and others. The theme
of "Leadership and Management" in the Defense
Self-Assessment Guide included measurement of
perceptions and attitudes regarding top management
involvement. Attitudes toward other constructs of
organizational climate such as Strategic Focus,
Customer Orientation, and Communications were also
measured by this self-assessment instrument.

The Climate version of the self-assessment
instrument consists of 70 items requiring responses
on a 6-point Likert scale ranging from 1 (strongly
disagree) to 6 (strongly agree). The PC-based
guide can be set up and used on any IBM-compatible
DOS-based personal computer with at least 256
kilobytes of operational memory. A copy of the 70
items from the Climate version of the Quality and
Productivity Self-Assessment Guide for Defense
Organizations is provided in Apperdix H.

Reliability

Reliability refers to consistency in
measurement. Kerlinger (1986, page 405) defines
reliability as the *accuracy* or *precision* of a
measuring instrument (italics in original). Like
those "reliable" people whose consistent and
predictable behaviors result in our confidence in
them and our ability to depend on them, so also are
tools of measurement deemed reliable. We can
depend upon these tools to demonstrate consistent
and predictable results.

Reliability in an instrument, such as the
Quality and Productivity Self-Assessment Guide
for Defense Organizations, is a function of the
number of questions within a scale and their
interrelationships. A scale is said to be
internally consistent when one item on a scale is
essentially equivalent to another item on that
scale. One of the most commonly used estimates of
reliability is Cronbach's alpha which is based on
the internal consistency of the scale. Cronbach's
alpha is based on the average correlation of items

within a scale and is itself a correlation
coefficient. Reliability coefficients of 0.70 or
higher are generally considered satisfactory.

Table 2 provides the scale means, standard
deviations, intercorrelations, and coefficients
alpha of the climate scales of the Defense
self-assessment instrument as reported by General
Research Corporation in the Final Technical Report
on the Development of Productivity and Quality
Self-Evaluation Audits (Somers, Roullen and Hsiao,
1989). The coefficients alpha range from 0.70 to
0.98 and are within an acceptable range. The
intercorrelations of the scales range from r = 0.39
to r = 0.96 indicating that most of the scales are
moderately to highly correlated.

Sample and Setting

The Quality and Productivity Self-Assessment
Guide for Defense Organizations was administered to
participants in the Total Quality Leadership
training courses provided by the Naval Medical
Quality Institute. Permission to retrieve and
analyze the data provided by the senior leadership

of the National Naval Medical Center in March

1991 was granted by the hospital Commander

(Appendix I). The desired population of senior

leadership with a directly reporting relationship

with the hospital Commander was the determining

factor in the selection of the National Naval

Medical Center as the survey site.

According to Kerlinger (1986, page 111), a

"representative sample" means that the sample has

approximately the characteristics of the population

relevant to the research in question. The senior

leadership of the National Naval Medical Center may

be an exclusive population. Generalization of the

resultant data to the entire population of senior

leadership in the Navy medical department should be

made with extreme caution.

Subjects

Appendix G depicts the organizational chart of

the National Naval Medical Center. It reflects the

senior leadership and their directly reporting

relationship with the hospital Commander. Of the

17 senior leaders who attended the Upper Management

Total Quality Leadership training workshop in March
1991, 14 voluntarily participated in the study.
This equates to a response rate of 82.35 per cent.

Procedure

The senior leadership of the National Naval
Medical Center was invited to attend a session of
the Upper Management Total Quality Leadership
training sponsored by the Naval Medical Quality
Institute in March 1991. Seventeen members of the
senior leadership, including the Commander himself,
attended this three-day workshop. They were
provided copies of the Quality and Productivity
Self-Assessment Guide for Defense Organizations
with standard instructions by the training staff of
the Naval Medical Quality Institute. The
organization and work center identification were
recorded as, respectively, "National Naval Medical
Center" and "Director." No other personal
identifiers were solicited. Participation in the
survey was not required.

Fourteen individuals participated in the
self-assessment survey tool data collection; this

represented 82.35 per cent of the population of 17
attendees. The use of available data for exploring
the perceptions of senior leadership toward their
organizational climate for Quality was approved by
the hospital Commander. Computer analysis
capability for the survey data provided by the
senior leadership was established. Data obtained
from the 14 survey tools were entered directly into
a microcomputer by the author. These data were
then retrieved and analyzed using the Defense
Productivity Program Office software for
aggregation of self-assessment guide response data.
Descriptive statistics were computed independently
by the author using commercially available software
(Microstat). The aggregate data are presented with
descriptive statistics in Chapter Three of this
paper.

CHAPTER THREE

PRESENTATION OF DATA

When you have eliminated the impossible,

whatever remains, however improbable, must

be the truth.

Sir Arthur Conan Doyle

The Total Quality methodology requires the collection and use of objective data by management to facilitate the development of sturdy decisions. Data, when they are presented in usable form, become information that is valuable input into the fundamental management processes of decision making and problem solving. The following statistics are summary measures gathered in 1991 of the perception of the senior leadership of the National Naval Medical Center toward their organizational climate for Quality.

The data were collected using a general purpose quality and productivity self-assessment tool which was described in Chapter Two of this paper. The units of measurement for the variables were derived from the accepted operational

definitions found in the professional literature.
These operational definitions were presented in the
literature review section of Chapter One of this
paper. For ease of review, discussion regarding
these findings was provided in a separate chapter,
Chapter Four, of this paper.

Somers, Roullen and Hsiao (1989) suggested
that any aggregate score lower than or equal to
3.50 was indicative of an area in which some
practices typically considered helpful for quality
and productivity were possibly absent in the
organization. The following scores were computed
from data collected at the National Naval Medical
Center in March 1991. The aggregate mean score in
the Climate area was computed as 4.26; this score
is well above the 3.50 benchmark. Each category
within the Climate area also had a computed
aggregate mean score above 3.50. These category
aggregate mean scores are displayed in Figure 8.
The aggregate mean score for the Strategic Focus
(SF) category was computed as 4.37, with a standard

deviation of 0.67. The aggregate mean score for the Leadership and Management (LM) category was computed as 4.39, with a standard deviation of 0.57. The aggregate mean score for the Work Force (WF) category was computed as 4.14, with a standard deviation of 0.43. The aggregate mean score for the Customer Orientation (Cust) category was computed as 4.54, with a standard deviation of 0.39. The aggregate mean score for the Communications (Com) category was computed as 3.86, with a standard deviation of 0.29. The descriptive statistics for each of these surveyed categories were computed separately for comparison. These subcategory scores are provided below.

Strategic Focus

This category of organizational climate for quality was measured in five variables: Awareness of Strategic Challenge (SF1), Vision for the Future (SF2), Innovation (SF3), Quality Policy and Philosophy (SF4), and Value Systems and Ethics (SF5). The distribution of scores for Awareness of Strategic Challenge range from 3.50 to 5.33, with a

mean score of 4.4764 and a standard deviation of 0.5766. The distribution of scores for Vision for the Future range from 2.60 to 4.80, with a mean score of 4.00 and a standard deviation of 0.5818. The distribution of scores for Innovation range from 3.50 to 5.00, with a mean score of 4.00 and a standard deviation of 0.6202. The distribution of scores for Quality Policy and Philosophy range from 3.40 to 5.40, with a mean score of 4.5571 and a standard deviation of 0.6284. The distribution of scores for Value Systems and Ethics range from 3.67 to 5.67, with a mean score of 4.7136 and a standard deviation of 0.6639. The frequency distribution curves for each of these Strategic Focus subcategories are shown in Figure 9. The range and mean are graphically displayed in Figure 10.

Leadership and Management

This category of organizational climate for quality was measured in five variables: Top Management Involvement (LM1), Visible Commitment to Goals (LM2), Role in Quality Improvement Process (LM3), Concern for Improvement (LM4), and System

and Structure for Quality Improvement (LM5). The distribution of scores for Management Involvement range from 3.50 to 6.00, with a mean score of 4.8036 and a standard deviation of 0.7350. The distribution of scores for Visible Commitment to Goals range from 3.00 to 6.00, with a mean score of 4.8807 and a standard deviation of 0.9489. The distribution of scores for Role in Quality Improvement Process range from 2.67 to 6.00, with a mean score of 4.2629 and a standard deviation of 0.9440. The distribution of scores for Concern for Improvement range from 1.50 to 5.50, with a mean score of 3.6429 and a standard deviation of 1.2157. The distribution of scores for System and Structure for Quality Improvment range from 1.50 to 6.00, with a mean score of 3.75 and a standard deviation of 1.1726. The frequency distribution curves for each of these Leadership and Management subcategories are shown in Figure 11. The range and mean are graphically displayed in Figure 12.

Work Force

This category of organizational climate for
quality was measured in eight variables: Awareness
of Productivity and Quality Issues (WF1), Attitudes
and Morale (WF2), Cooperation (WF3), Involvement
(WF4), Perceptions of Work Environment (WF5),
Social Interactions (WF6), Task Characteristics
(WF7), and Consequential Constraints (WF8). The
distribution of scores for Awareness of
Productivity and Quality range from 1.50 to 5.00,
with a mean score of 3.5357 and a standard
deviation of 0.9295. The distribution of scores
for Attitudes and Morale range from 2.75 to 5.50,
with a mean score of 4.4107 and a standard
deviation of 0.8583. The distribution of scores
for Cooperation range from 2.50 to 5.50, with a
mean score of 4.25 and a standard deviation of
0.9094. The distribution of scores for Involvement
range from 2.50 to 6.00, with a mean score of
4.25 and a standard deviation of 1.0331. The
distribution of scores for Perceptions of Work
Environment range from 2.67 to 5.33, with a mean
score of 4.0486 and a standard deviation of 0.7932.

The distribution of scores for Social Interactions range from 3.00 to 6.00, with a mean score of 4.6786 and a standard deviation of 0.8684. The distribution of scores for Task Characteristics range from 3.00 to 5.00, with a mean score of 3.8857 and a standard deviation of 0.7004. The distribution of scores for Consequential Constraints range from 3.00 to 5.29, with a mean score of 4.1429 and a standard deviation of 0.6945. The frequency distribution curves for each of these Work Force subcategories are shown in Figure 13. The range and mean are graphically displayed in Figure 14.

Customer Orientation

This category of organizational climate for quality was aggregated into one variable. The distribution of scores for Customer Orientation range from 3.00 to 5.50, with a mean score of 4.5357 and a standard deviation of 0.7196. The frequency distribution curve for the Customer Orientation category is shown in Figure 15. The range and mean graphically displayed in Figure 16.

Communications

This category of organizational climate for quality was aggregated into one variable. The distribution of scores for Communications range from 2.25 to 5.25, with a mean score of 3.8571 and a standard deviation of 0.9743. The frequency distribution curve for the Communications category is shown in Figure 17. The range and mean are graphically displayed in Figure 18.

CHAPTER FOUR

DISCUSSION

The descriptive survey method of research was selected for this study in order to obtain factual information about the quality climate at a selected Navy medical treatment facility. The data were collected to enable management to make more intelligent plans about future courses of action. The aggregate mean score of 4.26 was above the target goal of 3.5 established by the Defense Productivity Program Office. This indicated that factors were in place at the National Naval Medical Center which contributed to a positive climate for quality.

Causative and contributing factors which were related to the measured score at the Navy flagship hospital were not scientifically tested. However, the Navy Medical Department began the journey toward Total Quality in the summer of 1989. This was several years prior to the administration of the survey instrument used in this descriptive analysis. The senior leadership of the National

Naval Medical Center had sufficient opportunity in those intervening years to initiate, if they had not already done so, and enhance the quality climate in their organization. Possible contributing factors were gleaned from the literature and are provided by category in this chapter.

Although the aggregate mean score of each category was above the target, scores within the various categories fell into a wide range. The scores of several subcategories had significantly large standard deviations. The smaller the standard deviation of a category score, the more agreement among the members surveyed. These wide ranges of scores indicated areas of disagreement among the senior leadership toward the organizational climate for quality. The root cause of this disagreement was not explored as part of this study. However, a cursory review of the senior leadership of a typical Navy medical

treatment facility provided several possible
reasons for the wide range of scores and the large
standard deviations.

With routine staff turnover scheduled every
three years, the individuals currently serving as
the leadership of a Navy hospital have varying
years of tenure; additionally, this frequent
turnover subjects the leadership to a recurring
learning curve about total quality at the specific
facility. Dependent upon their individual
interest and background, each leader is at a
different place in the appreciation of the
complexity of the total quality paradigm. There
may also be some differences among groups other
than length of service or tenure, such as
professional affiliation (nurse, physician,
administrator) or military rank. The literature
does not indicate a variable of interest beyond the
commitment of top management.

As stated in an earlier chapter, no prior
scientific studies were discovered in the total

quality literature. Therefore, objective data on these possibly confounding or contributing variables were not collected. The correlation of potential contributing or confounding variables to the perception of senior leadership toward their organizational climate for quality was beyond the scope of this paper, but is worthy of future research.

Another interesting characteristic of the data presented in Chapter Three is the relative lack of a normal frequency distribution within the scored categories (Figures 9, 11, 13, 15 and 17). This phenomenon may be secondary to the small size of the population surveyed or may be related to the diversity of the individuals in the population as reflected in the range of scores and large standard deviations within categories. Additional research is necessary to determine the statistically significant relational variables.

Each climate for quality category is discussed separately in the following paragraphs. A review

of current practices, procedures and policies at
the National Naval Medical Center is provided.
Several methods are suggested to institutionalize
the management actions which contribute to a
positive climate for quality.

Strategic Focus

All subcategory mean scores were computed
above the 3.5 target. Noteworthy is the range of
scores within the Vision for the Future (SF2)
subcategory (Figure 10). This indicates some
disagreement in the focus of the organization on
continuous improvement of its services and
products. Continuous improvement requires
planning, doing the work, evaluating the results,
and modifying the work processes based upon those
objective evaluations.

The senior leadership within the Navy Medical
Department documented the organizational constancy
of purpose and issued a formal mission statement,
vision statement and set of guiding principles.

These "Charlie Golf One" posters were distributed throughout the Navy Medical Department for prominent display.

A strategic planning retreat was held in January 1991 to initiate a participative group effort to develop major areas for strategic focus. Fifty-seven concepts were compiled for consideration using the nominal group technique among the nearly forty flag-rank officers and equivalent Senior Executive Service civilians of the Navy medical department. The distilled nine strategic goals (Appendix F) were released to all medical department field commands to facilitate an iterative consideration, evaluation, and refinement feedback loop. It was anticipated that the final product of strategic goals, strategies and objectives would be adopted at the flag officers conference scheduled for May 30 and 31, 1991. Additionally, because the resultant strategic plan was designed in a fully participative manner, in accordance with the medical department vision and guiding principles, it was expected that this

strategic plan would be readily accepted and supported by all members of the organization.

Suggested methods for institutionalizing the Strategic Focus are:

- publicize the organizational mission and its importance through newsletters, bulletin boards and posters.

- incorporate the organizational vision statement in a strategic plan.

- begin the collection of data about the way work is accomplished.

- publicize success stories and give credit to the innovators.

- introduce formal mechanisms for the implementation of new ideas.

- adopt a quality policy; write it down and publicize it.

Leadership and Management

Example is leadership.

Albert Schweitzer

All subcategory mean scores were computed above the 3.5 target. However, the range within

these subcategories (Figure 12) and the
accompanying standard deviations indicated
significant disagreement in the perceived
commitment of the managers at all levels to
continuous improvement. Managers, by their words,
actions, support and choices, make it clear what is
important.

People in all organizations are boss-watchers
(Peters, 1987,p.496). People are not motivated by
histograms or two-inch statistical appendices.
They are moved by the symbolism inherent in daily
operations. The priorities of the organization are
reflected by the "walk" more than the "talk" of its
senior leadership. The minute-to-minute actions of
the leadership provide a visual model of the
strategic vision. Each day is filled with
thousands of symbolic acts, such as the personal
note on a memo, the seemingly minor personnel
decision, the hallway conversation, the questions
and the order in which they are asked, the places
visited. These symbolic acts add up to a pattern
that is perceived by members of the organization as

dramatically influential. People search for the pattern in their environment and seek to model it. According to behavioral scientists, the chief way people learn is by modeling. Therefore, it is paramount to the success of any desired strategy, that the leadership of the organization walk the talk. The leadership of Navy medicine must demonstrate Total Quality Leadership in its daily activities.

In order to clearly demonstrate their concern for improvement, managers at all levels must be aware of their role in the quality transformation. The words, actions, support and choices made by managers demonstrate the values and importance of quality. Navy medicine has demonstrated its organizational concern for improvement by establishing the Navy Medicine Quality Institute. The Executive Steering Group and the Quality Management Board, and the Quality Council of the Bureau of Medicine and Surgery are formal demonstrations of the commitment to quality. All managers have a role in quality improvement. By

appropriate follow-up, by learning and employing the tools and techniques, and by taking the role of coach, managers demonstrate concern and commitment (Juran, 1989).

Suggested methods for institutionalizing the commitment of Leadership and Management are:

- hold regular meetings to review progress.

- follow up on suggestions.

- select a few key areas and demonstrate commitment through personal involvement, such as making personal calls to customers.

- ensure that middle managers learn about Total Quality Leadership tools and techniques.

- establish an executive council for Total Quality implementation.

- construct flow charts of processes in various levels of the organization; identify possible quality improvement areas.

Work Force

"People must become the primary

source of value added, not a 'factor of production' to be optimized, minimized and/or eliminated."

Thomas J. Peters in Thriving on Chaos

All subcategory mean scores were above the 3.5 target (Figure 14). The computed mean score of Awareness of Quality and Productivity Issues (WF1) was the least elevated above the target at 3.54, with a range of scores from 1.5 to 5.0. This indicated disagreement on the perception of the awareness of the organizational work force toward the importance of a quality and productivity improvement process. This perceived lack of awareness is closely associated with the previously discussed categories of Strategic Focus and Leadership and Management. Discussion of methods to enhance the role of the work force in the quality and improvement process follows.

Between 1980 and 1985, eighty per cent of Fortune 500 companies had initiated a quality circle program; 83 per cent of those had withdrawn that initiative within eighteen months of its

inception (Kearney, 1985). Employee involvement
could not be mandated in an environment devoid of
management support. Successful implementation of
the Total Quality philosophy required a
restructuring of the entire corporate structure
with accompanying training. Training, and
continuous retraining, resulted in highly skilled
individuals who were able to add value to the
organization. Motorola documented their savings
from training in statistical process control
methods and problem-solving methods at rate of
return of thirty times the dollars invested
(Peters, 1987). Training was a powerful vehicle
for sustaining the strategic thrust of Total
Quality and motivating the work force.

Motivation theory reminds us that people work
in response to and anticipation of several stimuli
including money, achievement, influence,
advancement, job satisfaction, autonomy and
recognition. Effective motivational interventions
match incentives to that which individuals value in
their work (McKeen and McSwain, 1990). The

informal and formal rewards must be seen as
consequential to desired behaviors (Tarkenton,
1988). Some of the reward systems used by
commanding officers are: sailor of the quarter,
civilian of the quarter, sailor of the year,
special parking space, certificates of achievement
and letters of appreciation, notes of thanks from
patients and the command, special liberty such as
an afternoon off, and their picture in the
newspaper or other internal publications.

Many authors have written about the human side
of enterprise. The social interaction which takes
place in the work environment is another element of
the quality transformation. Leaders can promote a
friendly work environment by assigning work
equitably and setting reasonable work standards.
Additionally, the Navy has a strong infrastructure
of Morale, Recreation and Welfare (MWR) activities.
Commanders encourage friendly social interaction by
sponsoring MWR recreational activities, during or

after normal working hours, such as picnics,
softball and other intramural sports, hail and
farewell parties, luncheons, and ward room events.

A spirit of teamwork and cooperation must be
fostered. Individual accomplishments should be
reflected in team accomplishment. Scholtes (1988)
provides excellent guidelines on team building:
allow teams to develop a group identity, establish
cross-functional quality teams, and reward team
accomplishment. The attitudes and morale of the
staff will be reflected in the quality of their
work. Morale is affected by quality of leadership,
job fulfillment, personal recognition and overall
support in the work environment. The efforts of
the entire Navy Medical Department in support of
Operation Desert Storm are an outstanding example
of the impact of positive leadership toward team
accomplishment.

The system or organizational structure may
itself be a barrier to quality improvement.
Critical examination of the system and its
component processes can lead to improvements. Flow

charts which depict input, output, customers and interfaces with other entities are a visual method of system examination (Walton, 1986). Flow charts can be constructed for various levels of the organization. Identification of likely quality improvement areas is facilitated by this graphic method. Quality teams comprised of the people involved in the process can be commissioned to investigate, recommend and effect changes where possible (Feigenbaum, 1983). Improvement progress can be tracked after such changes are made.

The quality transformation takes place in the work environment. Organization members should participate in setting work goals and standards. The individual's perception of the fairness of the goals and standards must be taken into consideration. An emphasis on high quality and productivity will be reflected in each organizational member's perception of the work environment. The support and commitment of the organization members are essential for organizational success. It has been often said

that people support what they help create.
Involvement is key.

Suggested methods for institutionalizing the
involvement of the work force in the quality and
improvement process are:

- publicize the quality and improvement
process in newsletters, bulletin boards and other
internal communications.

- resolve complaints quickly and recognize top
performance.

- establish cross-functional process teams.

- reward team accomplishments; officially
sanction time set aside regularly for team members
to review and discuss their progress.

- use team approach to clarify goals and set
performance measures.

- re-examine work loads; assign jobs in an
equitable manner allowing organizational members to
participate in setting standards; re-assign people
if necessary.

- encourage after-work recreational activity.

- review task characteristics including the availability of appropriate supplies, equipment, information and time; assign a process team to identify and work on possible areas for improvement.

- ensure promotions are tied to performance.

Customer Orientation

With a range of scores from 3.0 to 5.5 (Figure 16), there is an indication that the senior leadership has a positive perception that people in the organization are customer oriented. The literature indicates that a strong customer orientation is necessary for quality. Through a formal training program called TEAM: Treat Everyone As Me, Navy medicine has officially recognized the essentiality of treating the staff as they are expected to treat the customer. This TEAM training is one of several aids to an awareness of the internal and external customers who deserve and demand our best efforts. Other elements of the customer orientation feedback system include the Healthcare Consumers Council, the Patient Relations

network, and on-going survey questionnaires
administered to inpatients and outpatients at
individual facilities.

Communications

The processes and system for communicating
information are critical to the successful quality
transformation. With a range of scores from 2.25
to 5.25 (Figure 18), there is some disagreement
among the senior leadership regarding
communications. Their scores indicate that
organizational members may not be getting the
information they need to do their jobs. Some of
the commonly employed vehicles for communications
in Navy medicine are: monthly meetings of all
department head meetings; regular meetings of
profession specific constituents (residents,
nurses, administrators); daily morning report which
is attended by all the senior leadership and
selected other subject matter experts; routine
internal correspondence including the Plan of the
Day and informal memoranda; and specialty advisor
newsletters. Management must open the channels of

communication between work units throughout the
organization.

CHAPTER FIVE

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Summary

For nearly a decade, various American industries have been attempting the journey to total quality. This journey is characterized by a shifting management paradigm. The role of senior leadership in the transformation has been theorized as vital to the successful implementation of total quality.

The primary purpose of this study was to objectively measure the perception of senior leadership toward their organizational climate for quality. Secondarily, this analysis was intended to provide a documented baseline measurement of the current status to allow future analysis of trends and progress. It was further intended that this baseline be used for future analysis of trends and progress in the implementation of total quality.

The method of research was a descriptive survey. Data were collected by means of a general

purpose quality and productivity instrument. The
survey instrument used for data collection was the
Quality and Productivity Self-Assessment Guide for
Defense Organizations - Climate version.

The population consisted of the senior
leadership of the National Naval Medical Center.
Of the seventeen individuals who were selected by
the Commander for Upper Management Total Quality
Leadership training, 14, or 82.35 per cent,
participated voluntarily in the study. Permission
to use these data was granted by appropriate
authority.

Individual scores and the aggregate Climate
score were computed using with the computer
software provided by the Defense Productivity
Program Office. The range and mean scores for the
total population were then calculated, using a
commercial statistics software package (Microstat),
on the five organizational climate for
quality categories: Strategic Focus, Leadership and
Management, Work Force, Customer Orientation and
Communications. These descriptive statistics were

analyzed and presented in Chapter Three. On the basis of these calculations, it was determined that the perception of the senior leadership toward the organizational climate for quality exceeded the target value. However, the wide range of scores and large standard deviation in several subcategories indicated some disagreement among the respondents and led to the following findings and recommendations.

Findings

This study revealed that the 14 senior leaders who participated in the assessment had an overall positive attitude toward the climate for quality at the National Naval Medical Center. However, the range of individual subcategory scores did not display a normal distribution. This was probably due to the small size of the population surveyed. The mean score of the aggregate subcategories was consistently above the target score established for this instrument. The lowest category mean score was 3.86, computed for Work Force. The population scored the highest mean, 4.54, in the category of

Customer Orientation. These scores and an assessment of current practices, policies, and procedures throughout the organization were discussed in Chapter Four in terms of their relationship to quality improvement.

Conclusions

Based upon the findings of this study, the following conclusions were drawn for this exclusive population:

1 - these senior leaders had an overall positive perception of the organizational climate for quality.

2 - within this population, the Quality and Productivity Self-Assessment Guide for Defense Organizations was a useful tool in measuring the disagreement in perceptions toward the five subcategories as evidenced by the wide range of individual mean scores.

3 - these senior leaders perceived that Communications was the least positive category

among those measured despite a score above the
target goal established by the Defense Productivity
Program Office.

4 - these senior leaders perceived that
Customer Orientation was the highest category in
support of the organizational climate for quality.

5 - there existed disagreement among the
leadership within the subcategories as evidenced by
the wide range of scores with a large standard
deviation and a distribution curve that was not
Gaussian. This was likely due to the small size of
the population surveyed.

It is possible that the Quality and
Productivity Self-Assessment Guide for Defense
Organizations is not a statistically valid tool
when used to measure the perceptions of small
populations. As a tool to measure the aggregate
command climate for Quality, this tool has
documented validity. However, considering the
small size of the senior leadership population at
an individual command, the variance of responses
cannot be brought into statistical control for

appropriate analysis. Macro-level measurements may serve a more useful purpose. Although knowledge of the status quo perceptions of this population of senior management can be useful in charting the implementation of Total Quality at the National Naval Medical Center, its usefulness as a representative sample of the senior leadership of Navy Medicine is severely limited.

Recommendations

> *"It is not enough that top management commit themselves for life to Quality and productivity. These obligations cannot be delegated - support is not enough, action is required."*
>
> *W. Edwards Deming*

Based on the literature reviewed and the findings of this study, the following recommendations are respectfully submitted for consideration:

1 - that further study be undertaken to determine if a similar pattern of organizational

climate for quality scores is manifested by the
senior leadership of other Navy medical treatment
facilities.

2 - that further study be undertaken to
determine if a similar pattern of organizational
climate for quality scores is manifested by a
representative sample of the entire work force at
Navy medical treatment facilities.

3 - that a periodic reassessment of senior
leadership perceptions be accomplished to determine
patterns of change as they relate to quality and
productivity efforts.

4 - that the Quality and Productivity
Self-Assessment Guide for Defense Organizations be
administered on a regular interval as an index of
the climate for quality at all medical treatment
facilities.

5 - that the Quality and Productivity
Self-Assessment Guide for Defense Organizations be
used to stimulate thinking about tools and
techniques for quality enhancement and applied as
an input or feedback loop for the development of

site-specific inservice education and other
management actions to enhance the organizational
climate for quality.

6- finally, it is recommended that the
organizational actions and policies discussed in
Chapter Four of this paper be reinforced and
institutionalized to ensure the further development
of a positive climate for quality.

It has been said that total quality is 90 per
cent attitude and 10 per cent skills. The attitude
of the senior leadership of a selected Navy medical
treatment facility was measured and reported in
this paper. By documenting the status quo with a
standardized instrument, a baseline measurement was
established which can be used to monitor trends and
document progress in the implementation of Total
Quality in the Navy Medical Department.

CHAPTER SIX

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on Quality Improvement in Health Care, at the

Boston meeting, October 1990.

LIST OF TABLES

TABLE 3.

STEPS OF PROBLEM SOLVING	QUALITY IMPROVEMENT TOOLS									
	Flow Diagrams	Brainstorming	Cause-Effect Diagrams	Data Collection	Graphs and Charts	Stratification	Pareto Analysis	Histograms	Scatter Diagrams	Box Plots
1. List and prioritize problems	○	○		●	○	○	●			
2. Define project and team	○				○	○				
3. Analyze symptoms	●			●	○	○	●	○		○
4. Formulate theories of causes	○	●	●		○					
5. Test theories	●			●	●	●	●	●	●	●
6. Identify root causes	●			●	●	●	●	●	●	●
7. Consider alternative solutions	●	●	○			○				
8. Design solutions and controls	●			●	●	○		●	●	●
9. Address resistance to change	○	●	○							
10. Implement solutions and controls	●				○		○	○	○	○
11. Check performance	○			●	●	●	●	●	○	●
12. Monitor control system	○			●	●	●		○		○

● Primary or frequent application of tool

○ Secondary, infrequent, or circumstantial

.... None or very rare

APPLICATIONS FOR QUALITY IMPROVEMENT TOOLS

TABLE 2

CLIMATE: SCALE MEANS, STANDARD DEVIATIONS, INTERCORRELATIONS, AND COEFFICIENTS ALPHA

{ } = coefficients Alpha

N = 704

LIST OF FIGURES

Figure 1

Snee Model of Total Quality

Management
Leadership

Ingredients
of
Total Quality

Quality
Management
Systems

Programs and Tools

Figure 2

Conceptual Model of Total Quality Implementation

$$LEADERSHIP \rightarrow \begin{array}{c} CLIMATE \\ for \\ QUALITY \end{array} \rightarrow TOTAL\ QUALITY$$

Figure 3

THE NAVY MEDICAL DEPARTMENT QUALITY INITIATIVE
TRAINING/ROADMAP INTEGRATION

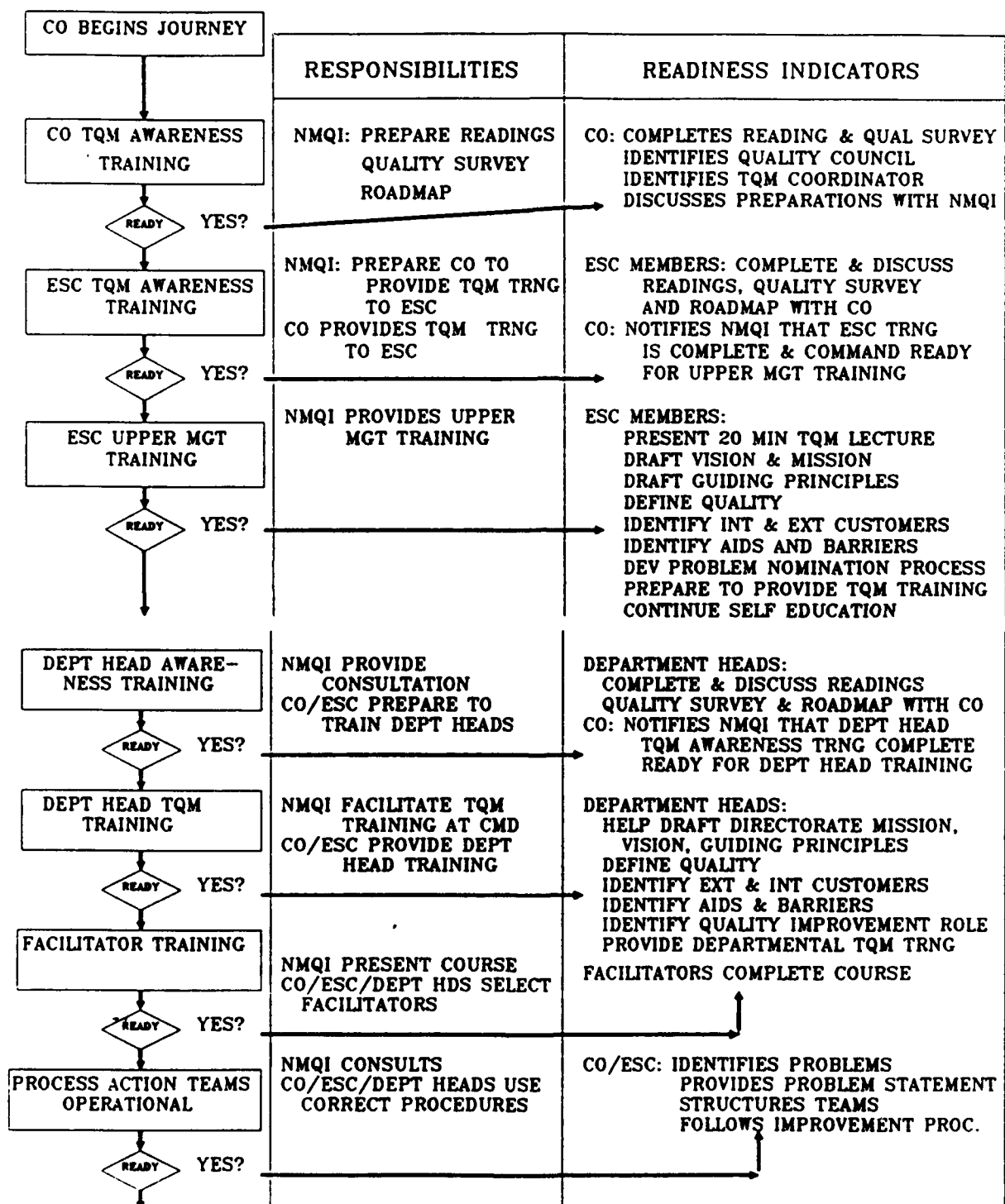|	RESPONSIBILITIES	READINESS INDICATORS
CO BEGINS JOURNEY		
CO TQM AWARENESS TRAINING → READY YES?	NMQI: PREPARE READINGS QUALITY SURVEY ROADMAP	CO: COMPLETES READING & QUAL SURVEY IDENTIFIES QUALITY COUNCIL IDENTIFIES TQM COORDINATOR DISCUSSES PREPARATIONS WITH NMQI
ESC TQM AWARENESS TRAINING → READY YES?	NMQI: PREPARE CO TO PROVIDE TQM TRNG TO ESC CO PROVIDES TQM TRNG TO ESC	ESC MEMBERS: COMPLETE & DISCUSS READINGS, QUALITY SURVEY AND ROADMAP WITH CO CO: NOTIFIES NMQI THAT ESC TRNG IS COMPLETE & COMMAND READY FOR UPPER MGT TRAINING
ESC UPPER MGT TRAINING → READY YES?	NMQI PROVIDES UPPER MGT TRAINING	ESC MEMBERS: PRESENT 20 MIN TQM LECTURE DRAFT VISION & MISSION DRAFT GUIDING PRINCIPLES DEFINE QUALITY IDENTIFY INT & EXT CUSTOMERS IDENTIFY AIDS AND BARRIERS DEV PROBLEM NOMINATION PROCESS PREPARE TO PROVIDE TQM TRAINING CONTINUE SELF EDUCATION
DEPT HEAD AWARE- NESS TRAINING → READY YES?	NMQI PROVIDE CONSULTATION CO/ESC PREPARE TO TRAIN DEPT HEADS	DEPARTMENT HEADS: COMPLETE & DISCUSS READINGS QUALITY SURVEY & ROADMAP WITH CO CO: NOTIFIES NMQI THAT DEPT HEAD TQM AWARENESS TRNG COMPLETE READY FOR DEPT HEAD TRAINING
DEPT HEAD TQM TRAINING → READY YES?	NMQI FACILITATE TQM TRAINING AT CMD CO/ESC PROVIDE DEPT HEAD TRAINING	DEPARTMENT HEADS: HELP DRAFT DIRECTORATE MISSION, VISION, GUIDING PRINCIPLES DEFINE QUALITY IDENTIFY EXT & INT CUSTOMERS IDENTIFY AIDS & BARRIERS IDENTIFY QUALITY IMPROVEMENT ROLE PROVIDE DEPARTMENTAL TQM TRNG
FACILITATOR TRAINING → READY YES?	NMQI PRESENT COURSE CO/ESC/DEPT HDS SELECT FACILITATORS	FACILITATORS COMPLETE COURSE
PROCESS ACTION TEAMS OPERATIONAL → READY YES?	NMQI CONSULTS CO/ESC/DEPT HEADS USE CORRECT PROCEDURES	CO/ESC: IDENTIFIES PROBLEMS PROVIDES PROBLEM STATEMENT STRUCTURES TEAMS FOLLOWS IMPROVEMENT PROC.

Figure 4

MAKING QUALITY HAPPEN:
The Role and Responsibilities
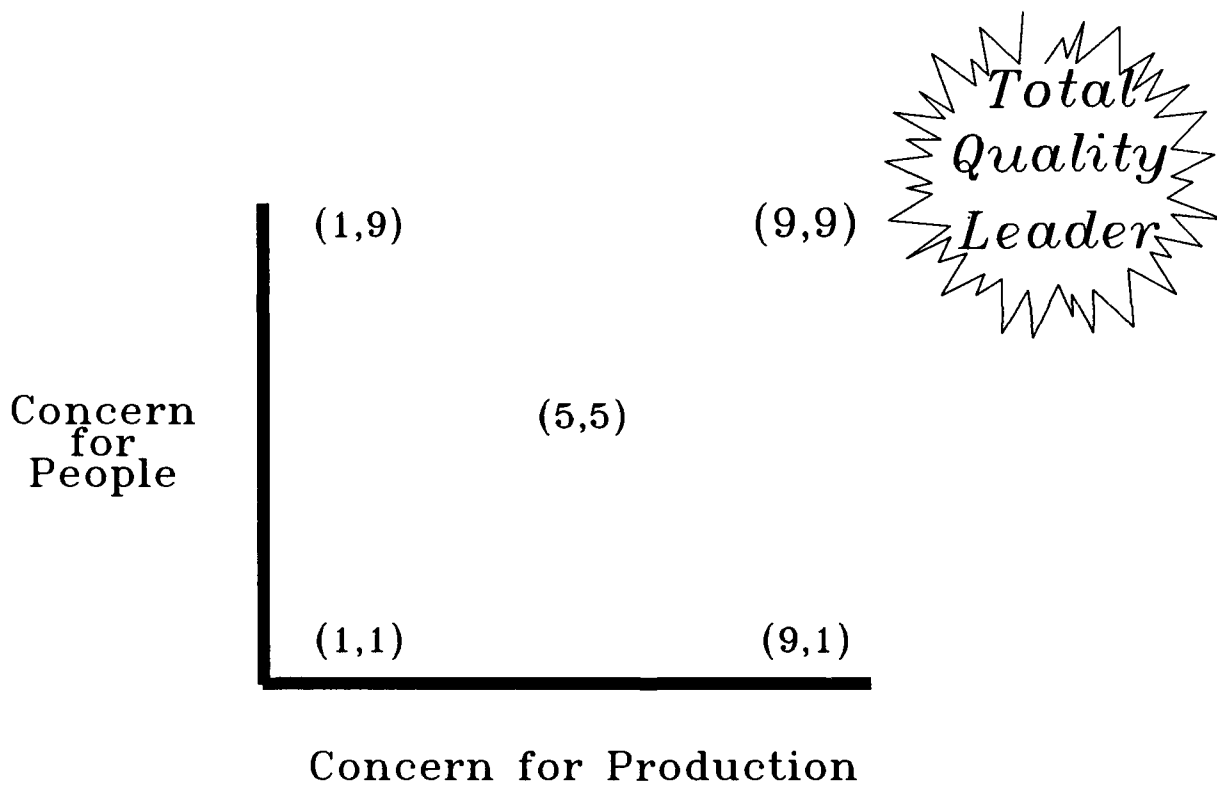of Healthcare Leaders in Navy Medicine

Course_Objectives

Unit 1: Perspectives on Quality
   - describe the course objectives
   - discuss your expectations of the course
   - identify historical highlights of TQM

Unit 2: Need/Benefit of Commitment to Quality
   - identify the need for change
   - define and discuss Quality
   - identify barriers, aids & benefits of TQM

Unit 3: Infrastructure for Quality
   - assist in establishing a QI infrastructure
   - discuss roles & responsibilities
   - relate vision, mission, and guiding
     principles to the QI infrastructure

Unit 4: The Process
   - identify and define the steps of a process
   - define "customer" and give examples of
     internal and external customers
   - define and give examples of selected
     concepts of the QI process

Unit 5: The FOCUS-PDCA Quality Improvement Cycle
   - describe the FOCUS-PDCA QI cycle
   - identify and discuss the steps in FOCUS-PDCA
   - list and describe the commonly used tools

Unit 6: The Quality Assurance/QI interface
   - identify the strengths of Quality Assurance
   - identify the pitfalls of Quality Assurance
   - discuss the solutions QI provides to the
     Quality Assurance pitfalls
   - describe the three initiatives the JCAHO is
     pursuing in transforming QA to QI

Unit 7: Bringing it all together: your role as a
        leader
   - apply the basic concepts and principles of
     TQM in your command using key leadership
     attributes, roles and responsibilities
   - state your role in leading your command
     through a Quality transformation

(March 1991 edition)

Figure 5

The Total Quality Leader

(1,9)   (9,9)   *Total Quality Leader*

Concern
for
People   (5,5)

(1,1)   (9,1)

Concern for Production

Figure 6

Organizational Climate for Quality

Strategic Focus
Leadership & Management
Work Force
Customer Orientation
Communications

Climate
for
Quality

TOTAL QUALITY
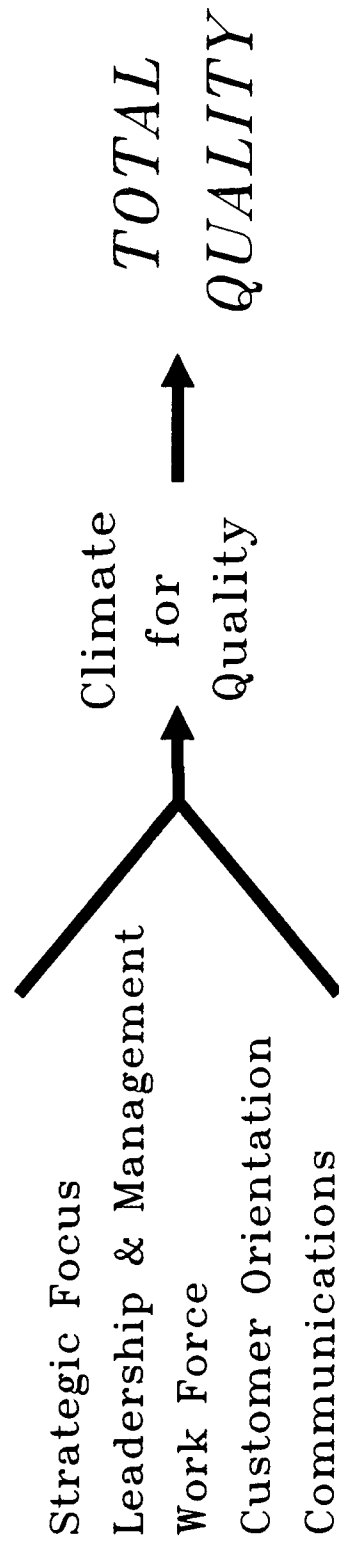
Figure 7

Productivity and Quality Taxonomy

CLIMATE / CULTURE

STRATEGIC FOCUS

Awareness of Strategic Challenge

Vision for the Future

Innovation

Quality Policy & Philosophy

Value Systems & Ethics

LEADERSHIP & MANAGEMENT

Top Management Involvement

Visible Commitment to Goals

Role in Quality Improvement Process

Concern for Improvement

System & Structure for Quality Improvement

WORK FORCE

Awareness of Productivity & Quality Issues

Attitudes & Morale

Cooperation

Involvement

Perceptions of Work Environment

Social Interactions

Task Characteristics

Consequential Constraints

CUSTOMER ORIENTATION

COMMUNICATIONS

Figure 8
Organizational Climate for Quality
Aggregate Category Mean Scores

Category   Goal   Overall Climate
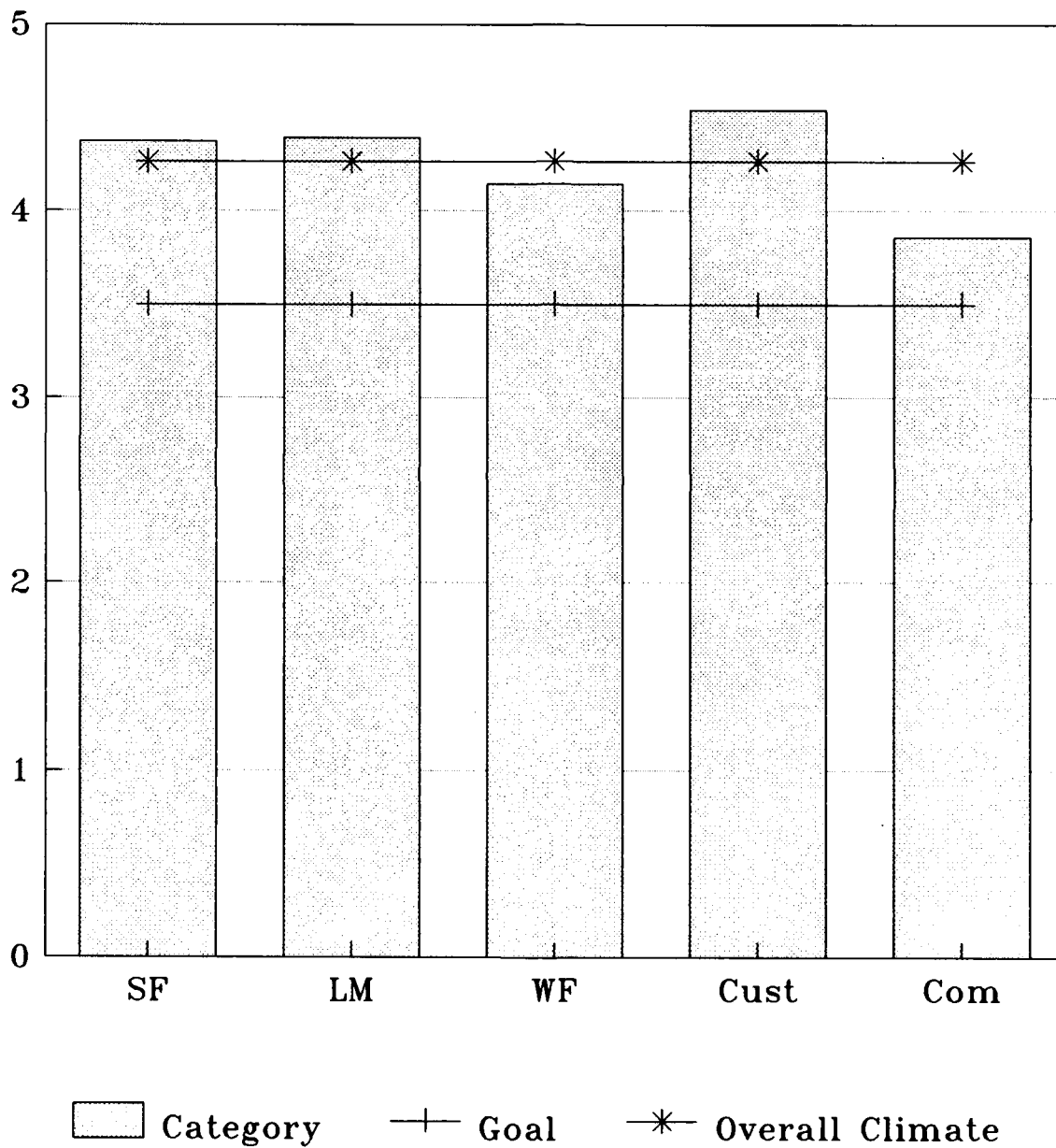
NNMC Senior Leadership – March 1991

Figure 9

Strategic Focus – Frequency Distribution

SF1: AWARENESS OF STRATEGIC CHALLENGE

SF2: VISION FOR THE FUTURE

SF3: INNOVATION

SF4: QUALITY POLICY & PHILOSOPHY

SF5: VALUE SYSTEMS & ETHICS
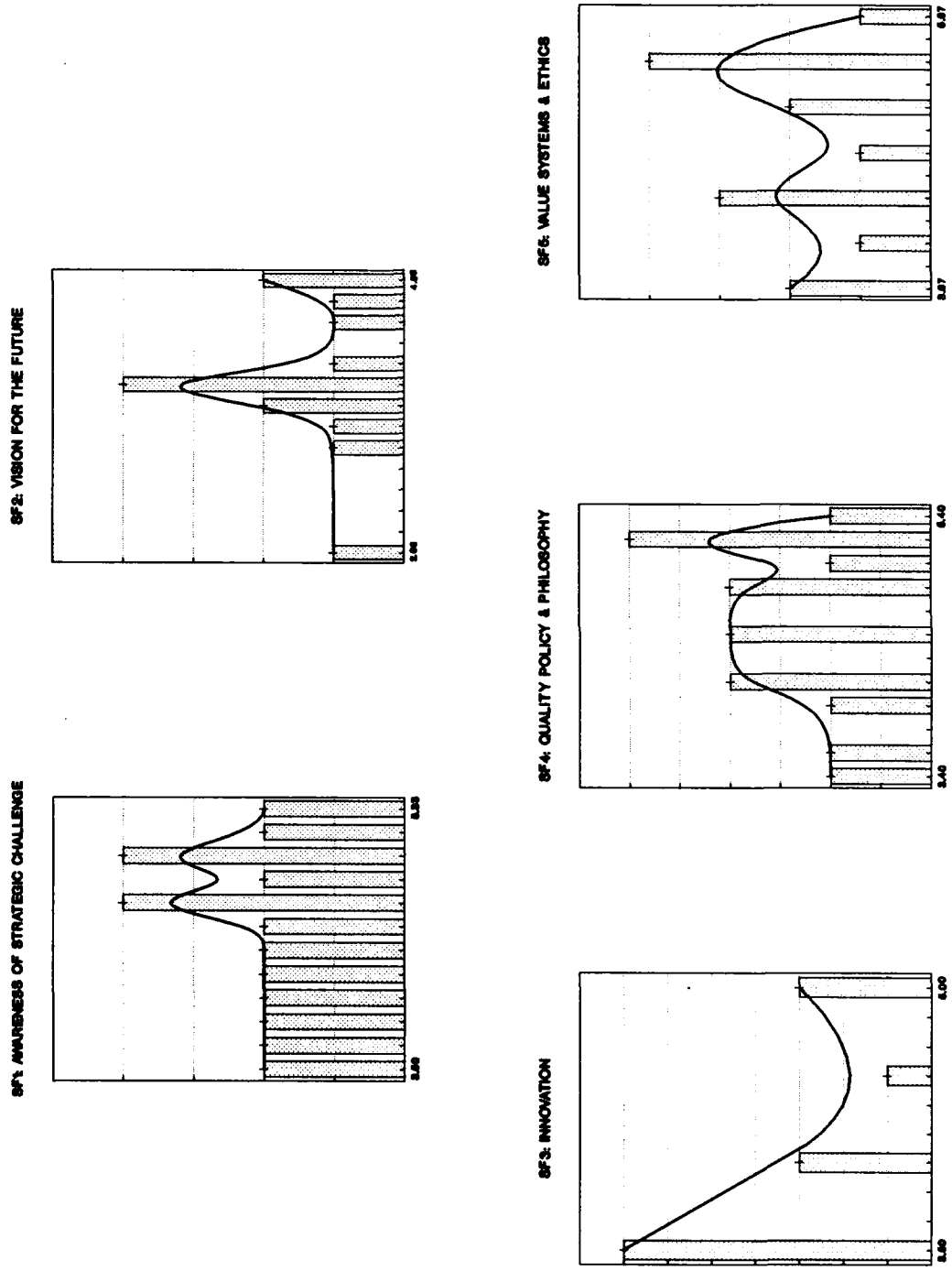
Figure 10
STRATEGIC FOCUS
Range and Mean Scores
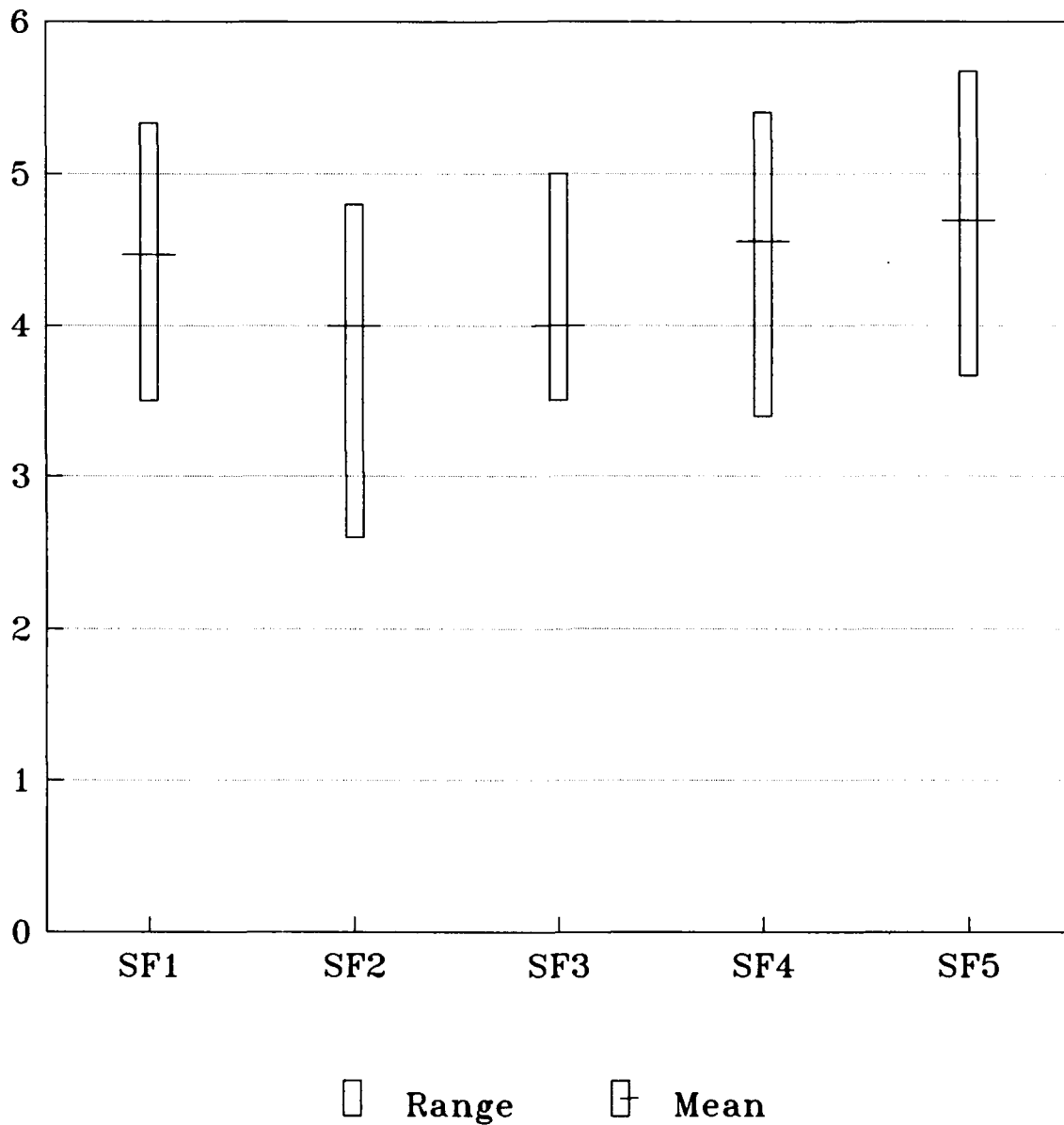
☐ Range   ⊟ Mean

NNMC Senior Leadership – March 1991

Figure 11

Leadership & Management – Frequency Distribution

LM3: VISIBLE COMMITMENT TO GOALS

LM1: TOP MANAGEMENT INVOLVEMENT

LM5: SYSTEM & STRUCTURE FOR QI
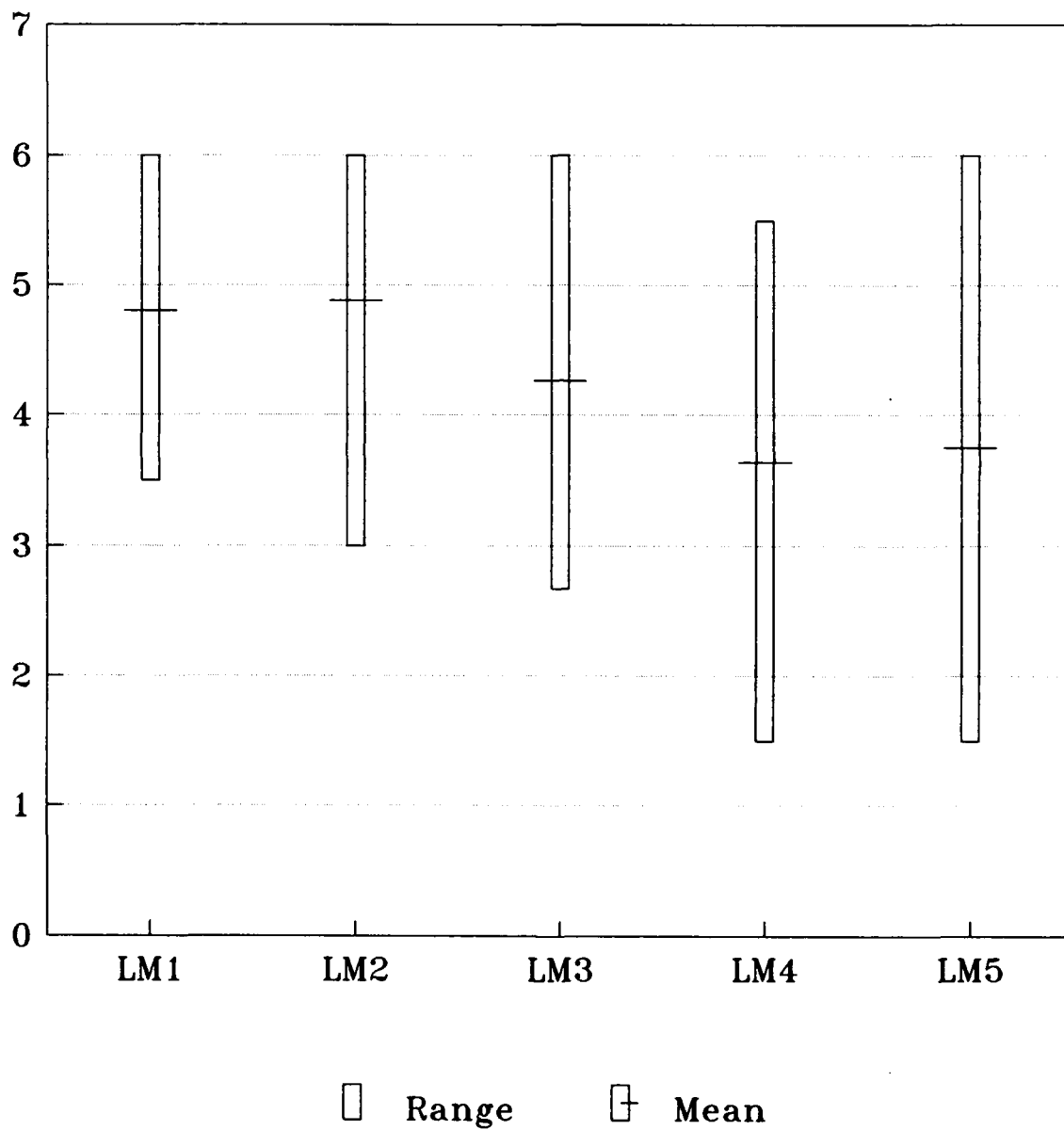
LM4: CONCERN FOR IMPROVEMENT

LM2: ROLE IN QI PROCESS
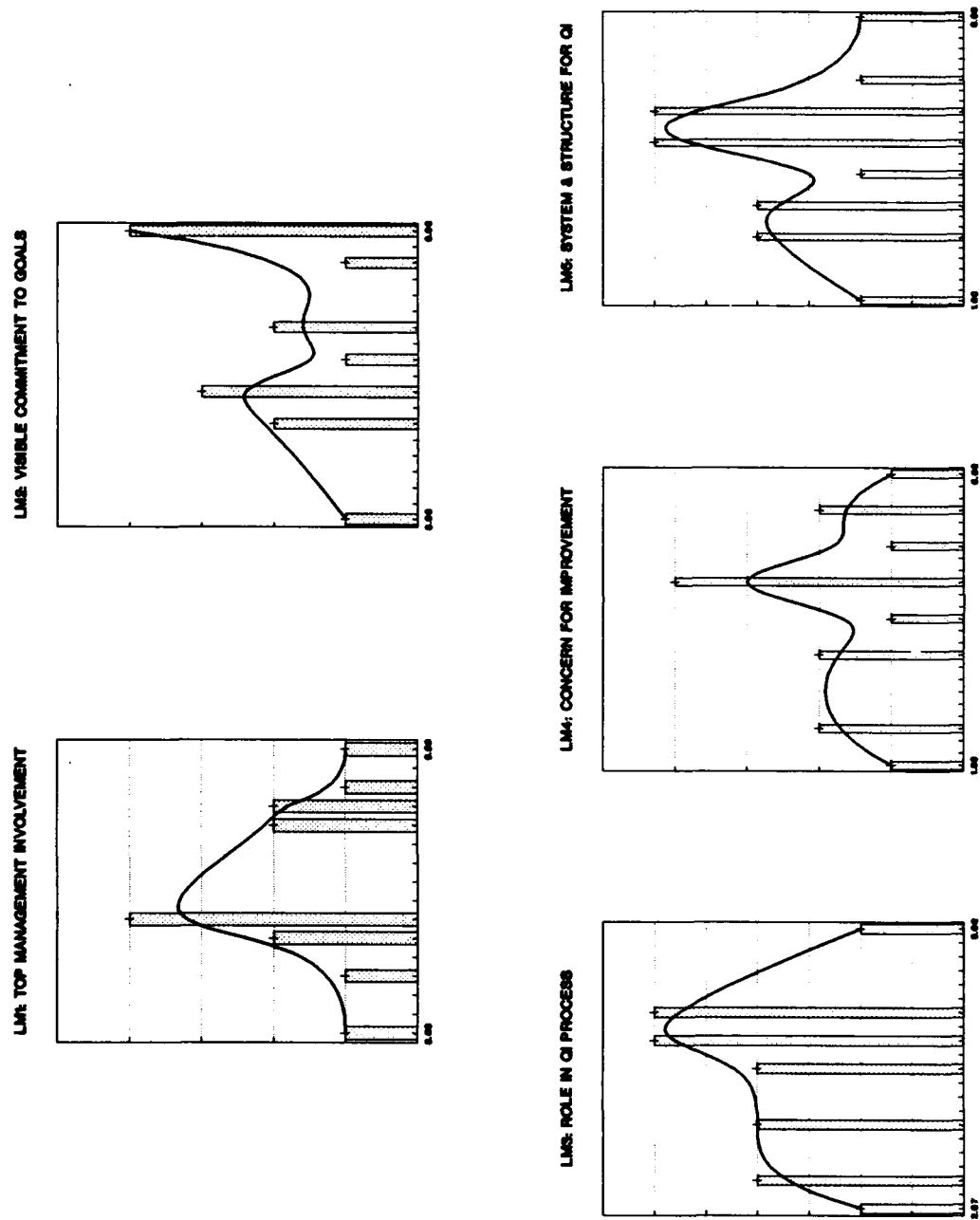
Figure 12
LEADERSHIP & MANAGEMENT
Range and Mean Scores

NNMC Senior Leadership – March 1991
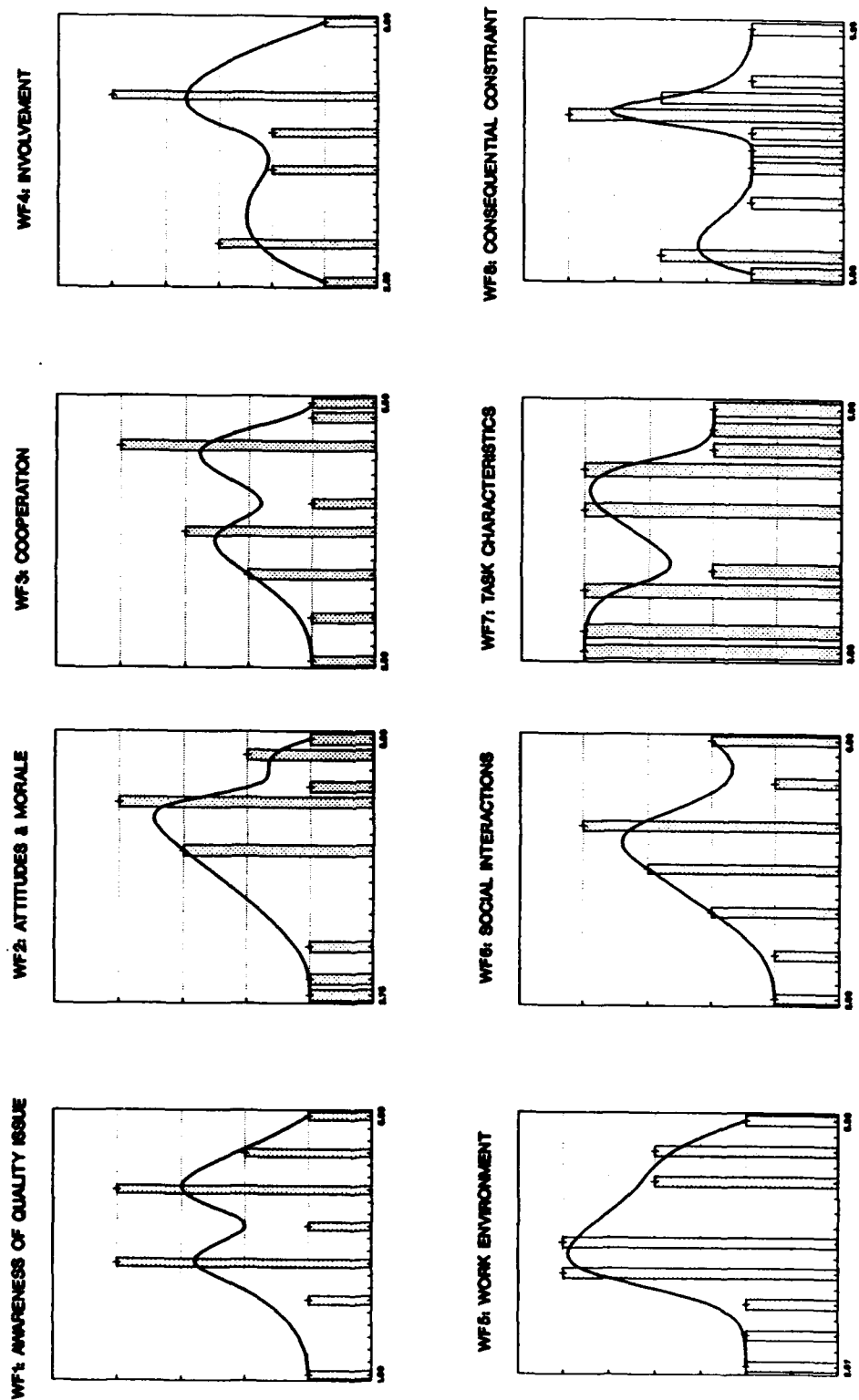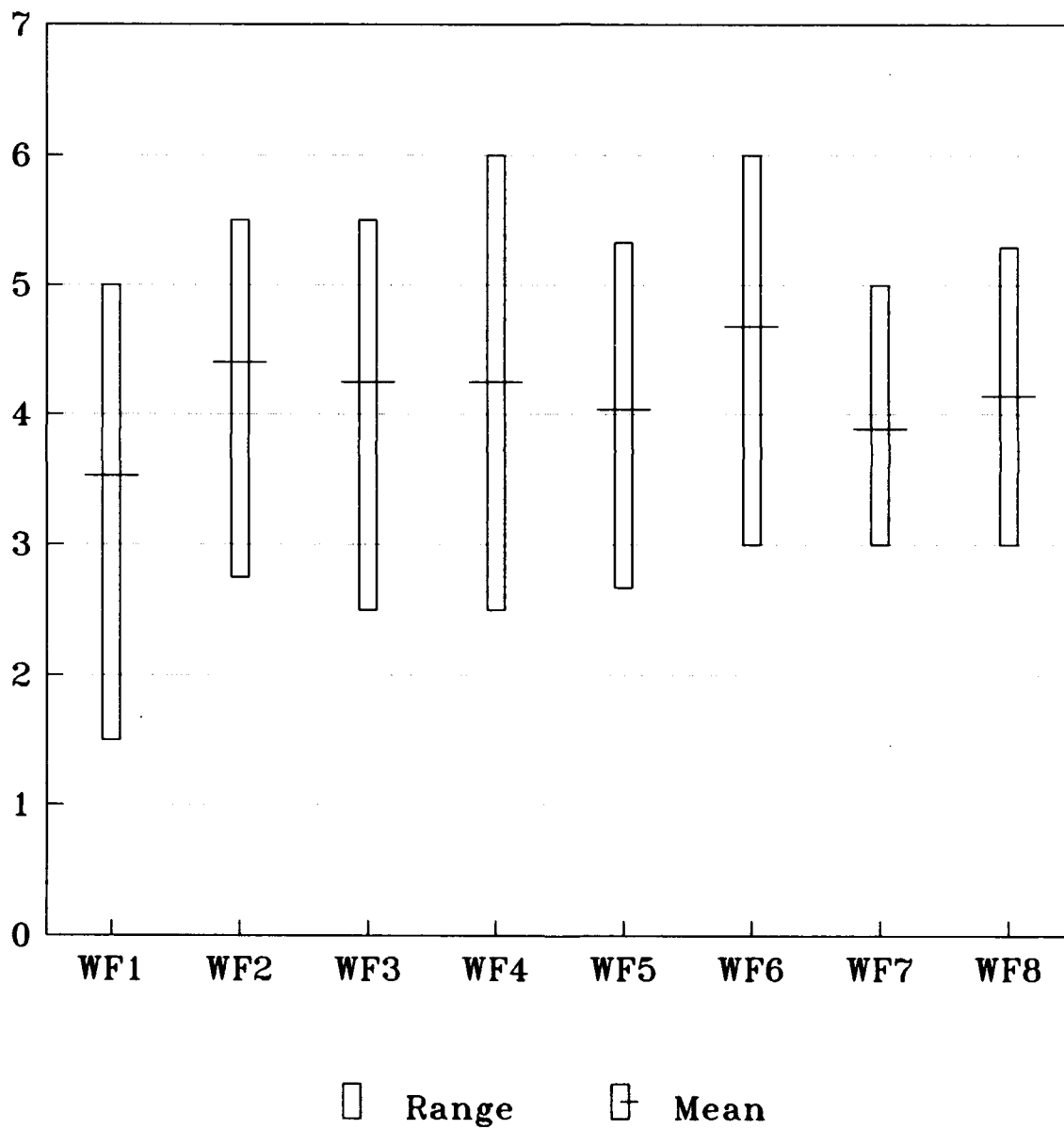
Figure 13

Work Force – Frequency Distributions

Figure 14
WORK FORCE
Range and Mean Scores

□ Range   🕀 Mean

NNMC Senior Leadership – March 1991

Figure 15

Customer Orientation
Frequency Distribution

3.00   5.50
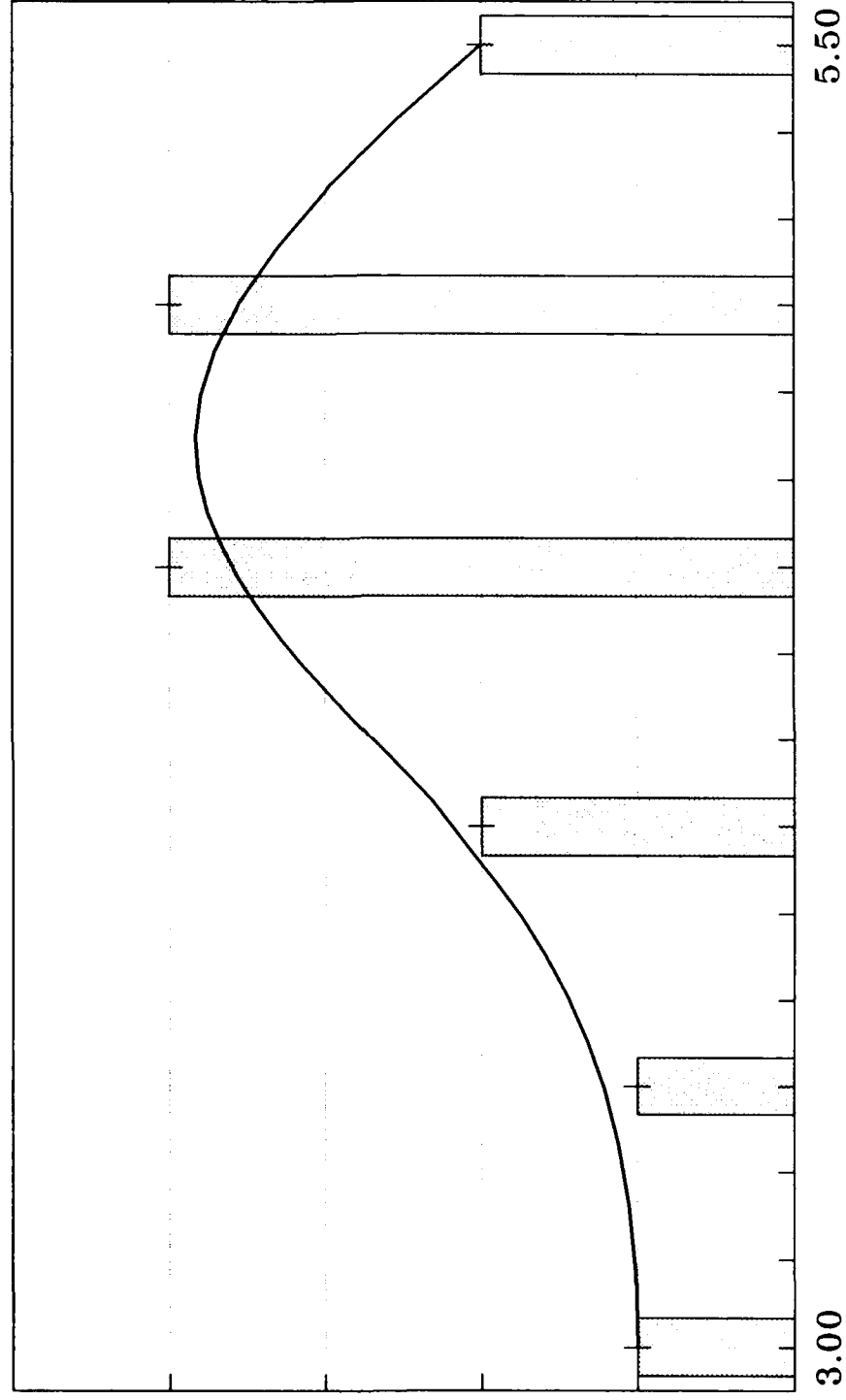
Figure 16
CUSTOMER ORIENTATION
Range and Mean Scores

Customer

☐ Range   ⊞ Mean

NNMC Senior Leadership – March 1991
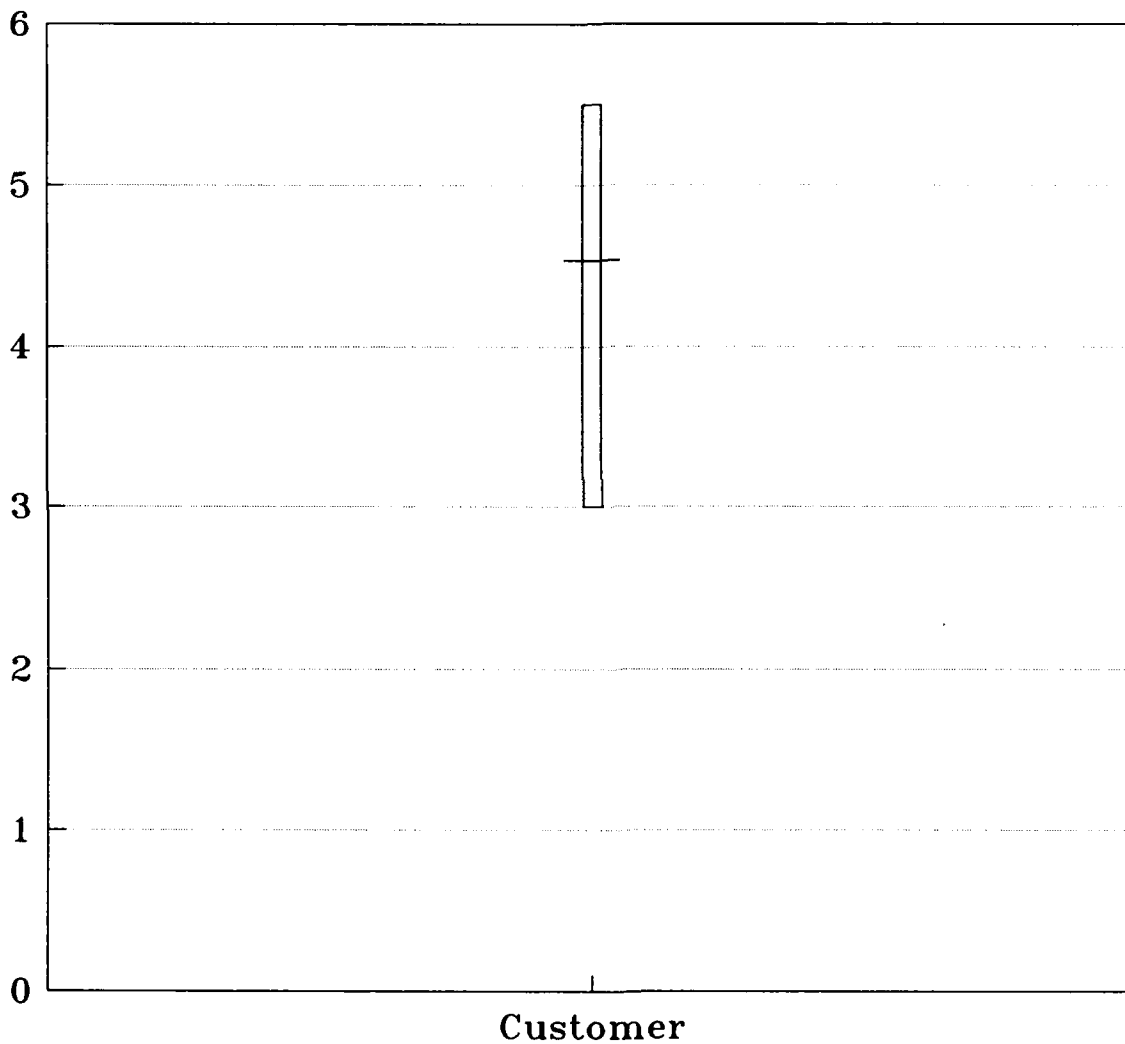
Figure 17
Communications
Frequency Distribution

2.25   5.25
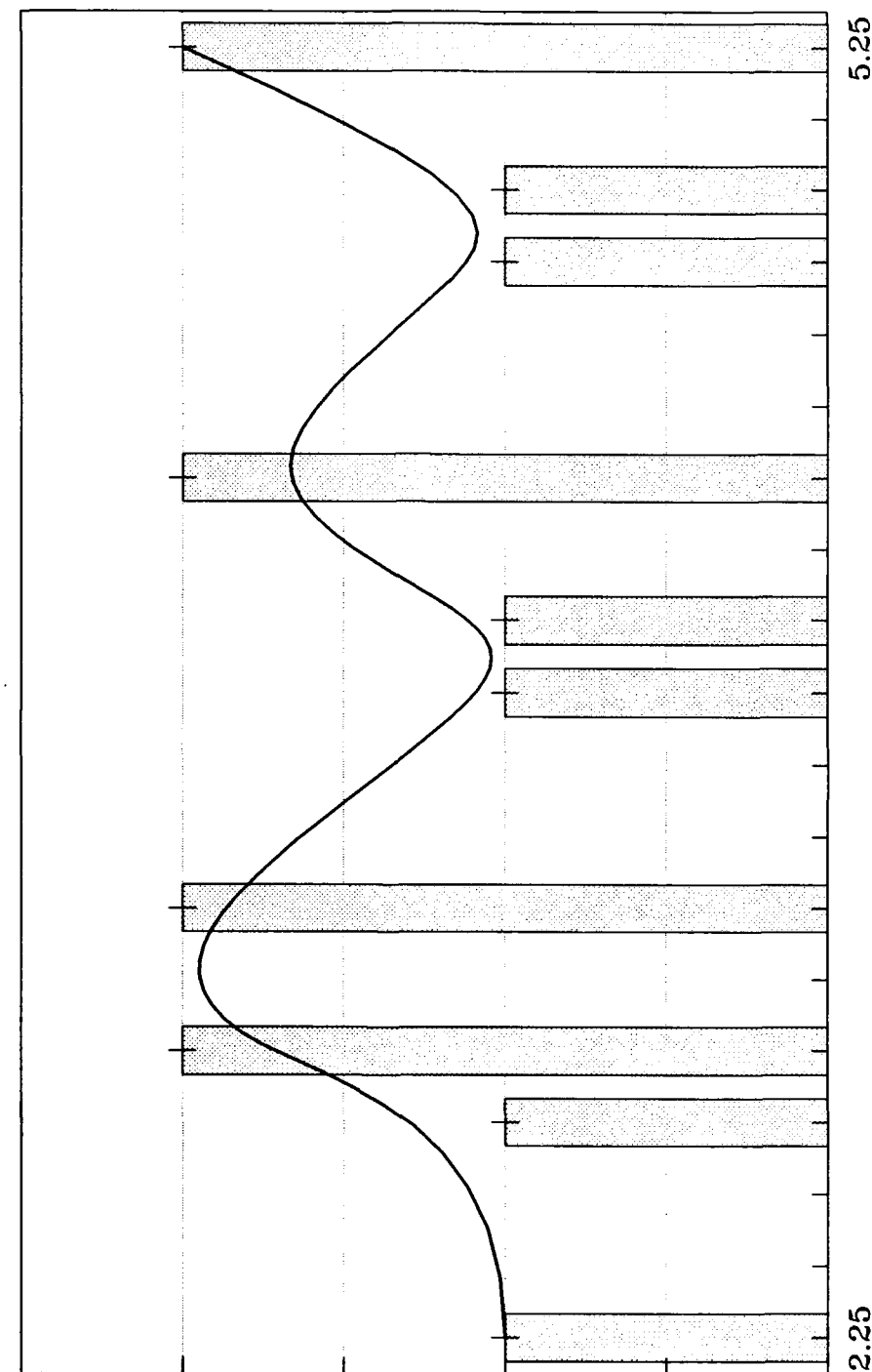
Figure 18
COMMUNICATIONS
Range and Mean Scores

Communications

☐ Range   ⊞ Mean

NNMC Senior Leadership – March 1991
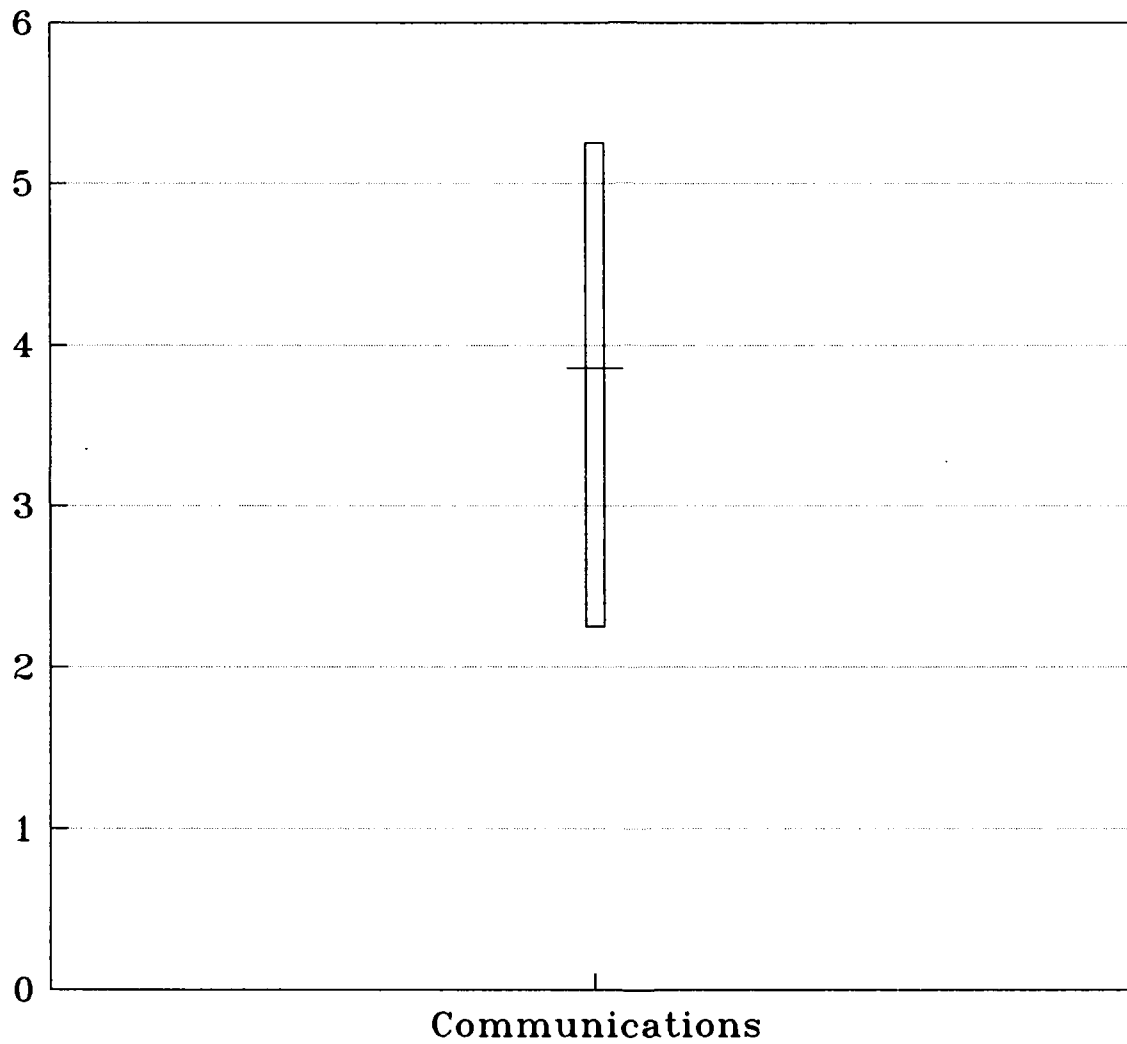
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Appendix F: Navy Medical Department Strategic Goals

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Productivity Self-Assessment Guide for
Defense Organizations

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Appendix A
OMB Circular A-132

Appendix B

**THE CHIEF OF NAVAL OPERATIONS
FOURTEEN POINTS OF TOTAL QUALITY LEADERSHIP**

1. Understand the mission and principles of the Navy. Have a clear grasp of how your command supports the Navy's mission and how the principles apply to your day-to-day actions.

2. Quality is the essence of TQL. Insist on quality performance and material. Do the job correctly the first time.

3. Know your job. Analyze and understand every facet of your responsibilities and those of your people.

4. Words alone don't solve problems. Look first at the process and the system for faults and solutions, not the people. Improve the process; train the people.

5. Quality training is the key to success. People must be fully trained to do their jobs. You are never too senior to learn. To do your best is not good enough unless you are properly trained to do the job.

6. Use analytical methods to understand and improve your jobs. Graphs and charts, properly used, are invaluable tools in this effort.

7. We are a team. We must work together across departments and commands. We must listen to the most junior people. All are charged with making the work place and quality of life better. All suggestions for improvement must be explained and action taken or rejected by the leadership. The leader must provide those who suggest improvements and ideas with feedback as to what is being done with the suggestions. The leadership will not necessarily adopt all ideas, but the leadership must provide the feedback on every suggestion.

8. Create an atmosphere of trust and open communication where everyone shares a sense of pride in their work. Get fear out of the work place. Create an atmosphere in which people tell you what is wrong in order that it can be fixed. Unless we recognize the problems, we cannot improve. We need to reward people who have the

courage to tell us what they see that needs
improvement so we can get better. Good ideas and
lessons learned must be transmitted and shared
between departments and commands.

9. Inspect smarter. Inspections should be
methods of learning and improvement rather than
threatening events. As all learn to do the job
correctly the first and every time, the number of
inspections will decrease.

10. Demand quality, not quotas. Quality in
the work place and in our lives is what we strive
for. If we get quality, all the other goals and
quotas will follow.

11. Education and self-improvement are just as
important as training. We must always get better.
Everyone must be involved in training and
self-education.

12. All improvements, big and small alike, are
important.

13. Be a leader. Your job as a supervisor is
to guide and assist your people. The leader gets
his people the tools and training they need to do
their jobs correctly. It is the leader's
responsibility to insure his people are properly
trained for the job before they are placed in a
position of standing a watch, starting a pump,
lighting off a radar, firing a gun, loading a
missile, etc.

14. All hands, from seaman to admiral, must
learn to use TQL.

Appendix C

DEMING'S FOURTEEN POINTS FOR MANAGEMENT

1. Create constancy of purpose for improvement of product and service.

2. Adopt the new philosophy.

3. Cease dependence on mass inspection.

4. End the practice of awarding business on price tag alone.

5. Improve constantly and forever the system of production and service.

6. Institute training.

7. Institute leadership.

8. Drive out fear.

9. Break down barriers between staff areas.

10. Eliminate slogans, exhortations, and targets for the workforce.

11. Eliminate numerical quotas.

12. Remove barriers to pride of workmanship.

13. Institute a vigorous program of education and retraining.

14. Take action to accomplish the transformation.

Appendix A

Executive Order 12637

OMB Circular A-132

Presidential Documents

Executive Order 12637 of April 27, 1988

Productivity Improvement Program for the Federal Government

By virtue of the authority vested in me as President by the Constitution and laws of the United States of America, including the Budget and Accounting Act of 1921, as amended, and in order to further improve a comprehensive program for the improvement of productivity throughout all Executive departments and agencies, it is hereby ordered as follows:

Section 1. There is hereby established a government-wide program to improve the quality, timeliness, and efficiency of services provided by the Federal Government. The goal of the program shall be to improve the quality and timeliness of service to the public and to achieve an annual average productivity increase of 3 percent in appropriate functions. Each Executive department and agency will gradually include appropriate functions in the Productivity Improvement Program, so that by 1991 all appropriate functions are covered.

Sec. 2. As used in this Order, the term:

(a) "Productivity" means the efficiency with which resources are used to produce a government·service or product at specified levels of quality and timeliness;

(b) "Appropriate functions" means those agency program functions that produce measurable outputs in the form of services to the public;

(c) "Public" means a customer outside the organization, such as citizens, businesses, State and local governments, other countries and/or their citizens, other agencies, the military;

(d) "Outputs" means products or services delivered to the public;

(e) "Measurement system" means both the specific measures used to determine whether standards of quality, timeliness, and efficiency of services are being met, and the procedures for the collection and reporting of data resulting from application of productivity measures;

(f) "Organizational performance standard" means a statement that quantifies and describes the desired level of quality, timeliness, and efficiency of services to be provided by an organization;

(g) "Management review" means the review by the Director of the Office of Management and Budget, as part of the budget process of agency accomplishments and plans for management and productivity improvements.

Sec. 3. The head of each Executive department and agency shall:

(a) Develop a complete inventory of all appropriate functions to be included in the productivity program, use the agency's planning process to review current functions, and develop agency goals and objectives for improvement in services to the public.

(b) Develop and submit annually to the Office of Management and Budget a productivity plan. Each plan shall conform to the policy guidance issued by the Director of the Office of Management and Budget, pursuant to Section 5 of this Order, and shall:

(1) set forth the agency's productivity goals and objectives;

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(2) target priorities for the year and expand coverage each subsequent year to additional appropriate functions, with the objective of complete coverage of all appropriate functions by 1991;

(3) describe the proposed actions designed to make the agency's operations and delivery of services more efficient and responsive;

(4) describe the methods, including efficiency reviews and cost comparisons with the private sector, that the agency will use either to improve its own service, or to make use of commercial services available in the private sector when it is economical to do so; and

(5) describe the measurement systems to be used by the agency to gauge quality, timeliness, and efficiency.

(c) Implement the productivity program after the Management review by the Director of the Office of Management and Budget as provided in Section 6.

(d) Assess annually the agency's progress toward achieving objectives and priorities, including documented gains and cost savings. This assessment will form the basis of the agency's report to the President as required by Section 4.

(e) Designate a senior official responsible for guiding the agency's productivity improvement program.

(f) Inform agency managers and employees that they are expected to be responsible for improvements in the quality, timeliness, and efficiency of services.

(g) Include productivity and quality improvement goals in the performance appraisals of managers and supervisors.

(h) Encourage employee participation in the productivity program through employee training, employee involvement in work-related decisions, incentives, recognition, and rewards and by taking actions to minimize negative impacts on employees that may occur as a result of the productivity program.

Sec. 4. The head of each Executive department and agency shall report annually to the President through the Domestic Policy Council on accomplishments achieved under the plan. The annual report will form the basis of the Management Report to the Congress.

Sec. 5. The Director of the Office of Management and Budget is authorized to:

(a) Develop and promulgate goals, policies, principles, standards, and guidelines for the effective administration of this Order by Executive departments and agencies; and

(b) Identify and propose the elimination of statutory and regulatory barriers that inhibit opportunities to make improvements in productivity.

Sec. 6. The Director shall review, through the management review process, each agency's productivity plan based upon the requirements and guidance issued pursuant to Section 5 of this Order. Nothing in this Section shall be construed as displacing agency responsibilities delegated by law.

Sec. 7. The Director of the Office of Management and Budget shall submit to the Congress, in conjunction with the President's budget, a report on productivity plans and accomplishments of the agencies and the government as a whole.

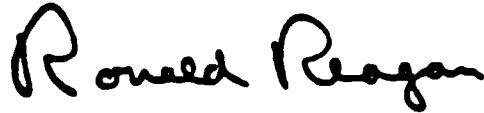Sec. 8. The Director of the Office of Personnel Management shall:

(a) Review Federal personnel policies and programs and make or recommend such changes as are appropriate to support productivity improvement;

(b) Review incentive policies and programs for Federal employees and make or recommend such changes as are appropriate to increase the productivity of the Federal Government;

(c) Develop and implement training programs for Federal employees in support of productivity improvements;

(d) Review policies and programs for Federal employees who may be displaced by productivity improvements and make or recommend such changes as are appropriate to ensure that such policies and programs will minimize any adverse impact on Federal employees.

Sec. 9. Executive Order No. 12552 of February 25, 1986, is hereby superseded.

THE WHITE HOUSE,
April 27, 1988.

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DATE __April 22, 1988__   CIRCULAR NO. A- __132__

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Federal Productivity and Quality Improvement In Service Delivery

1.   __Purpose__. This circular provides guidelines for the development and implementation of a productivity and quality improvement process in the Executive departments and agencies. The overall goal is to promote the timely delivery of high quality cost effective products and services to the public. The objectives are to: a) implement quality and productivity management practices in every Federal agency; and b) make continuous, incremental improvements in quality, timeliness and efficiency of services.

2.   __Authority__. Executive Order 12552 provides authority for the establishment of productivity improvement efforts in executive departments and agencies. The Executive Order places overall direction of this effort with the Office of Management and Budget (OMB) and authorizes the Director to set productivity goals, policies, standards, and guidelines for the administration of the order.

      This circular describes the objectives of governmentwide productivity and quality improvement in service delivery; provides guidance on productivity management and on the development of productivity plans; and specifies reporting requirements.

3.   __Scope and applicability.__ This circular applies to the executive agencies listed in Attachment A.

4.   __General Definitions__: The following definitions are used in relation to productivity and quality improvement;

      __Productivity__: the efficiency with which resources are used to provide a government service or product at specified levels of quality and timeliness.

      __Productivity improvement__: a decrease in the unit costs of products or services delivered to the public, while maintaining specified standards of quality and timeliness.

Quality: the extent to which a product or service meets customer requirements and is fit for use.

Quality improvement: an increase in the conformance of a product or service to requirements or specifications, and thus in the capability of a product or service to meet customer expectations.

Quality and productivity relationship: improved quality of a product or service nearly always results in improved productivity. Quality is obtained when a product or service is designed and produced to meet all requirements that the customer specifies or expects. Inherent in a quality design and production process is the avoidance of any rework or returns due to errors, unclear procedures or any other cause. Resources saved by "doing the right thing right the first time" translates into improved productivity (increased outputs and/or reduced inputs). Having a quality focus implies that an organization is making continuous improvements in reducing cycle time, eliminating non value-added work and thus, reducing overall costs.

Program function: those mission-related activities that provide services to customers outside the organization, and that are sufficiently repetitive that they can be measured. Program functions to be targeted for productivity and quality improvement have been identified in the agency's program inventory, a list of functions prepared by agencies during 1986 and approved by OMB during 1987.

Outputs: final products produced or services delivered.

Inputs: costs of resources used to produce outputs. These include: (1) salaries and benefits of all employees who directly or indirectly produce the outputs, including managerial, professional, technical and clerical workers of relevant divisions; (2) amortized capital expenses; i.e., costs of hardware, software, buildings, machinery, vehicles, etc.; and (3) all other costs, such as non-capital contracts, direct material, rent, ADP system maintenance, telecommunications, supplies, travel, training, etc.

Unit costs: the cost of producing one item of a product or providing one unit of service. Unit costs are determined by dividing the total dollar value of inputs by the total number of outputs.

5. Agency Responsibilities.

    A. Productivity and Quality Management. Each agency will
implement an active, agency-wide productivity and quality
improvement process that incorporates the following practices
considered essential to productivity and quality management:

        (1) Top-level support and commitment. Top management
and senior executives will provide vigorous support for
productivity and quality improvement by communicating its
importance throughout the agency. Commitment is manifested by
practical actions, such as leading the agency toward a total
customer orientation, constantly stimulating interest in
productivity and quality improvement, creating a positive climate
for improvement and innovation throughout the entire
organization, holding managers accountable for quality and
productivity improvement in performance evaluations, rewarding
quality and productivity achievements, and integrating
productivity and quality improvement planning with other
management processes.

        (2) A customer orientation. Work should be performed
throughout an agency with the customer in mind, whether the
customer is internal (e.g., customers of personnel, budget,
financial offices) or external (e.g., customers of service
delivery, such as grant applications, licenses, health
regulations). The needs and requirements of customers should be
sought, clarified and satisfied. Where there are multiple
customers of a program with conflicting requirements, their views
will be sought, choices explained and compromises worked out
within policy and legal constraints. Continuous improvements
will be made in work processes to achieve top quality at the
lowest feasible cost and to satisfy customers to the greatest
possible extent.

        (3) Written productivity and quality goals and an
annual improvement plan. Productivity and quality goals and
objectives will be set in all functions that are listed in the
approved program inventory. An annual plan will be developed as
an integral part of the agency's normal planning process and
reflected in the agency's budget submission.

        (4) Productivity and quality measures and standards
that are meaningful to agency programs. Measurement systems will
be established that are straightforward, easy for managers and
employees to understand, and of maximum utility in targeting
areas for improvement in all program functions. Measurement
systems provide: (a) quantification in dollar amounts of
resources used as the input for production of a service or
product; (b) the number of units (weighted, if applicable) of the
product or service provided to the customer; (c) the total amount
of time consumed in providing the service or product to the

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customer; and d) the level of service or product quality, both in terms of customer satisfaction (external quality) and of work performed to provide the service (internal quality). One of the first steps in establishing a measurement system is to determine baseline data. Measurement systems should be able to determine changes 'from the baseline in the ratio of outputs to inputs and in the quality and timeliness of services provided.

Once a baseline is established, standards are set by program managers that state what ought to be the level of work accomplished, its quality and its timeliness in order to meet customer requirements. This includes a number of aspects of the product or service, such as accuracy, timeliness, cost, reliability, etc. Standards should be: a) understandable, i.e., expressed in clear, simple terms that cannot be misinterpreted (e.g., descriptions such as "helpful" or "timely" should be avoided); b) achievable under existing operating conditions; c) consistent throughout the organization; d) flexible yet stable -- capable of being redesigned should the need arise, but remaining in place long enough to provide predictability; e) measurable, i.e., expressed in terms of numbers. The subjective should be eliminated to the greatest extent possible even in judgment-intensive work. A good test is -- if several independent reviewers apply the standard, will most or all come to the same conclusion?

(5) Use of the improvement plan and measurement system to hold managers and employees accountable. The goals set in the productivity improvement plans, together with the performance standards for each program function should be made part of SES and merit pay contracts and employee performance appraisals. Managers and employees should be held accountable for achieving these objectives and standards, and rewarded accordingly.

(6) Employee involvement in productivity and quality improvement efforts. In order to achieve optimal productivity and quality gains, teamwork at all levels will be encouraged. Teamwork involves managers, supervisors, and employees fully in improving service delivery, solving systemic problems, and correcting errors in all parts of work processes. Teamwork is a process that provides employees with the opportunity to participate in the decisions that affect their work and work environment and in solving problems that inhibit a high level of productivity and quality from being achieved. Group problem-solving processes, such as "continuous improvement" teams, "corrective action" teams or "quality improvement" teams are methods for encouraging teamwork. The importance of employee involvement in the quality and productivity improvement process cannot be overemphasized -- each employee is an important source of ideas on how to improve his/her specific work and the operations of the agency.

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(7) <u>Rewards for quality and productivity achievement</u>. To support the involvement of employees in the productivity and quality improvement process, agency officials should use various types of rewards and incentives. These incentives could include the traditional monetary awards available to agencies (e.g., spot awards, gainsharing programs, and outstanding achievement awards) and non-monetary awards such as certificates and plaques, articles in newsletters, and letters of appreciation from top officials. The creative use of incentives and the use of team awards for group performance are encouraged.

(8) <u>Training in methods for improving productivity and quality</u>. Senior management will encourage all executives and managers to participate in quality awareness training which will aid in setting organizational strategies for productivity and quality improvement. Supervisors and employees will be adequately trained in those problem-solving and analytic skills essential for continuously improving their operations.

(9) <u>Retraining and placement of employees affected by improvement efforts</u>. In the case where productivity enhancement results in a staff reduction, agency officials will offer an aggressive and positive program of assistance to affected employees. All possible steps will be taken to ensure that reductions occur through transfer and attrition, not reduction-in-force. Agencies will re-train employees and transfer them to other employment in the agency, if possible. Where this is not possible, the Office of Personnel Management will assist agencies in their job placement efforts (see section eight of this circular).

(10) <u>Reducing barriers to productivity and quality improvement.</u> Agencies will periodically review their internal regulations and policies to ensure that they are not burdening their components and acting as barriers to productivity and quality enhancement. Policies or regulations that require extensive reporting should be simplified. Greater authority should be delegated to the point of service delivery, so that customer needs can be more rapidly satisfied.

B. <u>Preparation of Agency Productivity Improvement Plan</u>. Agencies are required to submit an annual productivity plan to OMB in accordance with instructions provided in OMB Circular A-11. Each year the productivity improvement plan will cover a new segment of program functions, so that by 1991, all functions in the agency's program inventory will be covered. Plans are due to OMB on September 1 of each year.

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C.   Implementation of the Productivity Plan. Each agency
will implement its annual productivity plan following review by
the Director, OMB.

D.   Reporting and Monitoring. Agencies will report on the
status of functions in the Productivity Improvement Program on a
quarterly basis and on the implementation of productivity and
quality management on a semi-annual basis. Reports are to be
forwarded to OMB by the tenth day of the month following the end
of the reporting period. The information required for reporting
is contained in Attachment B.

Each year an annual productivity report will be
forwarded to OMB by December 1, which will cover the prior fiscal
year's productivity and quality achievements. The format to be
used will be sent to agencies before the end of each fiscal year
(see section 10 below).

The information submitted in these reports will be the
basis for OMB's annual report on productivity achievement
prepared for the President and submitted to the Congress.

6.   OMB Responsibilities. OMB will: (1) provide guidance and
coordination for the government-wide effort; (2) use productivity
and quality data in budget formulation; (3) track and monitor
progress in achieving productivity improvements; (4) work with
agencies to identify and reduce or eliminate unnecessary or
inappropriate regulatory and statutory barriers to productivity;
(5) create an atmosphere of positive reinforcement for
productivity improvement; (6) work with agencies to develop
quality and productivity improvement prototypes that can serve as
models for similar functions in other agencies; and (7) work with
OPM and other agencies to ensure that Federal managers and
employees receive continuing education in methods for achieving
productivity and quality improvement.

7.   Role of the President's Council on Management Improvement
(PCMI). The PCMI, representing the participating agencies, will
play a leadership role in the implementation of this government-
wide effort to improve productivity in executive agencies. The
PCMI will undertake projects to support and reinforce
productivity and quality improvement, publicize exemplary
practices and assist agencies to mount similar activities, study
and compare agency productivity and quality improvement efforts,
and provide recommendations for improving and strengthening
governmentwide productivity and quality in service delivery.

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8. Role of the Office of Personnel Management (OPM). The OPM will:

o   review and recommend appropriate revisions of personnel policy and practices currently in effect to support and facilitate agency implementation of the productivity program. Areas subject to study and possible change include classification, incentive practices, and performance appraisal;

o   develop and issue materials on selected topics, such as incentives and position management, to assist agencies in carrying out flexible personnel practices;

o   develop and implement training programs for Federal employees on quality and productivity management and improvement; and

o   assist agencies in their job placement and retraining efforts to minimize negative impacts on employees that may result from implementing productivity improvements.

9. Role of the Bureau of Labor Statistics (BLS). The BLS will provide technical assistance to OMB and the executive agencies on productivity measurement, when requested. This includes such matters as selecting output indicators, improving their accuracy, and weighting non-equivalent outputs. The Federal Productivity Measurement System (FPMS), operated by BLS since 1973, contains instructions, guidelines and examples for productivity measurement that agencies should find useful in developing measurement systems.

10. Integration of the OMB and BLS Productivity Measurement Data Systems. OMB, in cooperation with BLS, will issue an annual data call to participating agencies requesting information on completed fiscal year program accomplishments. Agencies will send all data on functions that are part of the government-wide Productivity Improvement Program to OMB and all data on other functions covered by BLS' Federal Productivity Measurement System to BLS. OMB will share all data with BLS, so that agencies need only report on any matching function once, thus ensuring there are no duplicative reporting requirements.

BLS will process the FPMS statistics for all agencies as it has in past years, return the data to the participating agencies and summarize and publish them. OMB will publish productivity and quality data on the government-wide effort in the Management Report sent to Congress each year.

11. Productivity Resource Center. The Federal Productivity Resource Center, established by cooperative agency efforts, provides information to agencies on various aspects of

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productivity and quality improvement. Information is available on productivity and quality improvement techniques and strategies, good management practices, case studies of successful efforts to improve productivity and quality in both the public and private sectors, and the development of measurement systems. The Center, operating as a clearinghouse and referral service, may be reached at (202) 395-3033.

12. <u>Relationship to OMB Circular A-76.</u> Functions that are part of an agency's approved productivity inventory that meet the definition of a commercial activity in A-76 must undergo competition with the private sector. These activities must be competed as scheduled by the agency to meet the requirements of Executive Order 12615. If the function, as a result of an A-76 study, is contracted out to the private sector, it will be subject to A-76 program oversight. On the other hand, if the function remains in the government; it will be subject to Productivity Improvement Program oversight.

13. <u>Effective Date</u>: This circular is effective upon publication.

14. <u>Sunset Date</u>. This circular shall have an independent policy review to ascertain its effectiveness three years after its issuance.

15. <u>Inquiries</u>. Any questions regarding this circular should be directed to the Productivity Management Branch at 395-3692.

James C. Miller III
Director

Attachments

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Executive Agencies Included in the Productivity Improvement
Program

Agriculture
Commerce
Defense
Education
Energy
Environmental Protection Agency
General Services Administration
Health and Human Services
Housing and Urban Development
Interior
Justice
Labor
National Aeronautics and Space Administration
Office of Personnel Management
State
Transportation
Treasury
United States Information Agency
Veterans Administration

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REPORTING SYSTEM: Part A - Semi-Annually
                  Part B - Quarterly

Progress in implementing government-wide productivity and quality
improvement efforts and instituting productivity and quality
management practices throughout the agency will be monitored by
OMB.

The report, designed for this purpose, consists of two parts:
A) department-wide productivity and quality management, which
will be reported semi-annually (due April 10 and October 10); and
B) status of program functions, which will be reported quarterly
(due January 10, April 10, July 10 and October 10). The
directions are below:

A.   Department-wide Productivity and Quality Management

     The section on department-wide productivity and quality
management consists of a brief narrative stating significant
actions the agency has taken during the past six months and
activities planned for the next six months. Both actions
completed and planned should relate to some or all of the
indicators listed below:

     o   Top management commitment to quality/productivity shown
in practical management actions (e.g., top management has
requested a significant increase in the employee training budget
for productivity improvement skills training, made it the top
priority in its budgetary request and plans to contract for
training 20,000 employees in FY 1989).

     o   Employee involvement and teamwork in problem-solving
and improving key services.

     o   Quality and productivity training provided at all
levels.

     o   Accountability for quality and productivity improvement
tied to managers' performance appraisal.

     o   Productivity and quality measures developed and
standards set for program functions.

     o   Elimination of barriers to productivity and quality
improvement.

     o   Employee recognition and incentive programs established
throughout agency.

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o   Customer orientation permeates every program function.

B.   Status of Program Functions Undergoing Productivity and
      Quality Improvement

      Reporting on program functions where plans have been
submitted to OMB is on an exception basis. Normally no report on
a program function is necessary unless: a) OMB program office
has requested periodic information on a specific function (e.g.,
productivity plan lacked important data); or b) a change has
occurred in the program function that may have a significant
impact on productivity or quality (e.g., a planned improvement
strategy cannot be implemented; a new breakthrough has been made
in improving the function, etc.).

      The report consists of a brief narrative stating significant
actions taken during the reporting quarter.

KEEP NARRATIVES BRIEF. QUARTERLY REPORTS (PART B) SHOULD NOT
EXCEED TWO OR THREE TYPED PAGES. SEMI-ANNUAL REPORTS (PARTS A
AND B) SHOULD NOT EXCEED FOUR OR FIVE TYPED PAGES. SEND REPORTS
BY THE TENTH DAY OF THE MONTH FOLLOWING THE END OF THE REPORTING
PERIOD TO:

            Chief, Productivity Management Branch
            Financial Management Division
            Office of Management and Budget
            Room 6235 - NEOB
            726 Jack   Place N.W.
            Washingt   D.C. 20503

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Service /Agency Productivity Principals

Organization	Office	Fax	Contact
Army - DASC-DME	9-695-6931	9-697-7440	Mr. Rick Adams
Navy - ASN (S&L)/SPECAO	9-692-0815	9-692-0263/4416	Mr. Gerard Hoffman
Air Force - SAF/ACS	9-694-7832	9-697-5572	Mr. A. Ernest Fitzgerald
Air Force - AF/PRMI	9-697-1821	9-694-9381	Maj. David A. Doye
Marine Corps MPRO-1	9-694-0852	9-694-4957	Col. David Haughey
DCA-H100V	9-692-2256	9-557-0305	Ms. Sondra Hutchinson
DCAA-OWD	9-274-6438	9-274-7567	Mr. Russell Richards
DIA -OC-5	9-695-7969		Mr. Thomas W. Albertson
DIS - V0980	9-475-1551/1552	9-475-7599	Mr. William Allbritten
DMA-PPI	9-285-9309	9-285-9374	Ms. Peggy Poindexter
DNA - MPMO	9-325-1090	9-325-7366	Mr. James Elam
DLA - CO	9-274-7971	9-274-3201	Ms. Cathy Kelleher
NSA - N12	9-688-5547		Mr. Charles Catherman
NSA - DDPR	8-235-6661		Mr. James Rogan
DoD Schools	9-325-0690	9-325-2059	Ms. Virginia Addison
Inspector General	9-697-3963	9-694-2718	Mr. Stewart Hummel

Appendix D

U.S. National Quality Award

UNITED STATES NATIONAL QUALITY AWARD

The Baldrige Award Scoring Categories

Leadership. This category examines primarily how
the senior executives create and sustain a clear
and visible quality value system along with a
supporting management system to guide all
activities of the company. Also examined are the
senior executives' and the company's leadership and
support of quality developments both inside
and outside the company.

Information and analysis. This category examines
the scope, validity, use, and management of data
and information that underlie the company's total
quality system. Also examined is the adequacy of
the data and information to support a
prevention-based approach to quality using
'management by fact.'

Strategic quality planning. This category examines
the company's planning process for retaining or
achieving quality leadership and how the company
integrates quality improvement planning into
overall business planning. Also examined are the
company's short-term and long-term priorities to
achieve and/or sustain a quality leadership
position.

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Human resource utilization. This category examines the effectiveness of the company's effort to develop and utilize the full potential of the work force for quality and to maintain an environment conducive to full participation, continuous improvement, and personal and organizational growth.

Quality assurance of products and services. This category examines the systematic approaches used by the company for total quality control of goods and services, based primarily upon process design and control, including control of procured materials, parts, and services. Also examined is the integration of quality control with continuous quality improvement.

Quality results. This category examines quality levels and quality improvement based upon objective measures derived from analysis of customer requirements and expectations. and from analysis of business operations. Also examined are current quality levels in relation to those of competing firms.

Customer satisfaction. This category examines the company's knowledge of the customer, overall customer service systems, responsiveness, and its ability to meet requirements and expectations.

1990
Application
Guidelines

Malcolm Baldrige
National
Quality
Award

"The improvement
of quality in
products and the
improvement of
quality in service —
these are national
priorities as
never before."

George Bush

EXAMINATION CATEGORIES, ITEMS AND POINT VALUES
Malcolm Baldrige National Quality Award

1990 Examination Categories/Items	Maximum Points

1.0 Leadership — 100

1.1 Senior Executive Leadership	30
1.2 Quality Values	20
1.3 Management for Quality	30
1.4 Public Responsibility	20

2.0 Information and Analysis — 60

2.1 Scope and Management of Quality Data and Information	35
2.2 Analysis of Quality Data and Information	25

3.0 Strategic Quality Planning — 90

3.1 Strategic Quality Planning Process	40
3.2 Quality Leadership Indicators in Planning	25
3.3 Quality Priorities	25

4.0 Human Resource Utilization — 150

4.1 Human Resource Management	30
4.2 Employee Involvement	40
4.3 Quality Education and Training	40
4.4 Employee Recognition and Performance Measurement	20
4.5 Employee Well-Being and Morale	20

5.0 Quality Assurance of Products and Services — 150

5.1 Design and Introduction of Quality Products and Services	30
5.2 Process and Quality Control	25
5.3 Continuous Improvement of Processes, Products and Services	25
5.4 Quality Assessment	15
5.5 Documentation	10
5.6 Quality Assurance, Quality Assessment and Quality Improvement of Support Services and Business Processes	25
5.7 Quality Assurance, Quality Assessment and Quality Improvement of Suppliers	20

6.0 Quality Results — 150

6.1 Quality of Products and Services	50
6.2 Comparison of Quality Results	35
6.3 Business Process, Operational and Support Service Quality Improvement	35
6.4 Supplier Quality Improvement	30

7.0 Customer Satisfaction — 300

7.1 Knowledge of Customer Requirements and Expectations	50
7.2 Customer Relationship Management	30
7.3 Customer Service Standards	20
7.4 Commitment to Customers	20
7.5 Complaint Resolution for Quality Improvement	30
7.6 Customer Satisfaction Determination	50
7.7 Customer Satisfaction Results	50
7.8 Customer Satisfaction Comparison	50

TOTAL POINTS	1000

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0 Leadership (...)

The **Leadership** category examines how the senior executives create and sustain a clear and visible quality value system along with a supporting management system to guide all activities of the company toward quality excellence. Also examined are the senior executives' and the company's quality leadership in the external community and how the company integrates its public responsibilities with its quality values and practices.

1.1 Senior Executive Leadership
(30 pts.)

Describe the senior executives' leadership, personal involvement and visibility in developing and maintaining an environment for quality excellence.

AREAS TO ADDRESS

a. senior executives' leadership and personal involvement in quality-related activities such as goal setting, planning, review of quality plans and progress, teams, giving and receiving education and training. recognition of employees, learning about the quality of domestic and international competitors. and meeting with customers and suppliers

b. senior executives' approach to building the quality values into the leadership process of the company

c. senior executives' communication. access and contact within the company

d. senior executives' leadership and communication of quality excellence outside the company to groups such as national, trade, business. professional and community organizations, and schools

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Note: *The term **senior executives** refers to the highest ranking official of the organization applying for the Award and those reporting directly to that official.*

Quality Values (20 pts.)

Describe the company's quality values, how they are projected in a consistent manner, and how adoption of the values throughout the company is assessed and reinforced.

AREAS TO ADDRESS

a. brief summary of the content of policy, mission or guidelines that demonstrate the company's quality values

b. company's communications activities and plans to project the values throughout the company

c. recent or current actions that demonstrate the importance of the quality values with respect to other business considerations, such as short-term profits and schedules

d. how the company evaluates the extent to which the quality values have been adopted throughout the company. such as through surveys. interviews or other means, and how employee acceptance is reinforced

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1.3 Management for Quality
(30 pts.)

Describe how the company integrates its quality values into day-to-day management of all units.

AREAS TO ADDRESS

a. key strategies for involving all levels of management and supervision in quality, and principal roles and responsibilities at each level

b. key strategies to promote cooperation among managers and supervisors at all levels such as through use of interunit teams or internal customer/supplier techniques

c. types, frequency and content of company reviews of the status of quality plans, and types of actions taken to assist units not performing according to plans

d. how management assesses the effectiveness of its approaches and improves or changes its approaches to integrating quality values into day-to-day management

e. key indicators of involvement of all levels of management and of effective cooperation among managers

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4 Public Responsibility (20 pts.)

scribe how the company extends its
quality leadership to the external
community and integrates its
responsibilities to the public for health,
safety, environmental protection, and
ethical business practice into its quality
policies and activities.

AREAS TO ADDRESS

a. promoting quality awareness and sharing with external groups such as community, business, trade, school and government organizations

b. encouraging employee leadership and involvement in quality activities of professional, local, state, national, trade, business and education groups and in industry, national and international standards activities

c. full integration of business ethics, public health and safety, environmental protection, waste management and other regulatory requirements into overall quality leadership policies, systems and continuous improvement objectives

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2.0 Information and Analysis (60 pts.)

The *Information and Analysis* category examines the scope, validity, use, and management of data and information that underlie the company's total quality management system. Also examined is the adequacy of the data and information to support a responsive prevention approach to quality based upon "management by fact."

2.1 Scope and Management of Quality Data and Information
(35 pts.)

Describe the company's base of data
nd information used for planning,
nagement, and evaluation of quality,
..nd how data and information
reliability, timeliness, and access are
assured.

AREAS TO ADDRESS

a. criteria for selecting items to be included in the quality-related data and information base

b. scope and types of data: customers; internal operations and processes; employee-related; safety, health and other regulatory; competitive and benchmark data; quality results; supplier quality; and other

c. processes and technologies the company uses to ensure validity, consistency, standardization, review, update and timely access throughout the company

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Note: *The purpose of this Item is to permit the applicant to demonstrate the* breadth *and* depth *of the data assembled as part of its total quality management effort. Applicants should give brief descriptions of the types of data under major headings such as "employees" and subheadings such as "education and training," "teams," and "recognition." Under each subheading, give a brief description of the data and information. Actual data should not be reported in this Item. Such data are requested in other Examination Items.*

2.2 Analysis of Quality Data and Information (25 pts.)

Describe how data and information are
..ed to support the company's key
quality leadership objectives in a timely
manner.

AREAS TO ADDRESS

a. principal types of analysis performed such as determination of trends, projections of quality improvements that should result from changes in practice or technology, evaluation of the performance of key systems, and assessment of long-term performance of products

b. how analysis supports key objectives and functions such as planning, day-to-day quality improvement activities, policy development, human resource strategy development, and management review of quality

c. steps taken and plans to shorten the cycle of data gathering, analysis, and access to improve support of company quality objectives

d. how analysis leads to changes in types of data collected, improved reliability of data, and improved analytical capabilities

The *Strategic Quality Planning* category examines the company's planning process for retaining or achieving quality leadership and how the company integrates quality improvement planning into overall business planning. Also examined are the company's short-term and longer-term priorities to achieve and/or sustain a quality leadership position.

3.1 Strategic Quality Planning Process *(40 pts.)*

Describe the company's strategic quality planning process for short-term (1-2 years) and longer-term (3-5 years or more) quality leadership and customer satisfaction.

AREAS TO ADDRESS

a. how strategic quality plans are developed and how they are integrated with overall business planning

b. principal types of data, information and analysis used in planning and feasibility evaluation such as customer requirements, process capabilities, competitive and benchmark data, and supplier data

c. principal roles competitive and benchmark data play in determining projected or potential improvements in quality, closing quality gaps, or exceeding competitors' capabilities

d. how employees, suppliers, and customers contribute to planning

e. how key requirements such as new technology, employee education and training, and improvements in supplier quality are determined

f. how plans are implemented such as through priority initiatives or projects; how resources are committed for key requirements such as capital expenditures and training; and how specific requirements are deployed to all work units and to suppliers

g. how the planning process is evaluated and improved

3.2 Quality Leadership Indicators in Planning *(25 pts.)*

Describe the company's approach to selecting quality-related competitive comparisons and world-class benchmarks to support strategic quality planning.

AREAS TO ADDRESS

a. criteria the company uses for selecting competitive comparisons and benchmarks: what areas to benchmark and with whom to compare

b. current sources of competitive and benchmark data including company and independent testing

c. current actions and plans to change the scope of competitive and benchmark data, to seek new or additional sources of such data, or to change the basis for selection

3.3 Quality Priorities *(25 pts.)*

Summarize the company's principal quality priorities and plans for the short term (1-2 years) and longer term (3-5 years or more).

AREAS TO ADDRESS

a. principal short-term and longer-term priorities and their relationship to the company's leadership objectives

b. resources committed to plans for education and training, technology and other key requirements

c. how the company will ensure that suppliers are able to meet its quality requirements

d. projection of major changes in the company's competitive quality position based upon implementation of the plan

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The *Human Resource Utilization* category examines the effectiveness of the company's efforts to develop and realize the full potential of the work force, including management, and to maintain an environment conducive to full participation, quality leadership, and personal and organizational growth.

4.1 Human Resource Management *(30 pts.)*

Describe how the company's human resource plans support its quality leadership objectives; summarize principal short-term (1-2 years) and longer-term (3-5 years or more) priorities.

AREAS TO ADDRESS
a. how the company integrates its human resource plans with the quality requirements of business plans
b. key strategies for increasing the involvement, effectiveness and productivity of all categories of employees, including hourly, bargaining unit and contract employees, and managers
c. principal human resource priorities for the short term and longer term and how they relate to the company's quality priorities
d. how the company uses its overall employee-related data to evaluate and improve its human resource management, strategies, practices and plans

Note: *Key strategies might include one or more of the following: mechanisms for promoting cooperation such as internal customer/supplier techniques or other internal partnerships; initiatives to promote labor-management cooperation such as partnerships with unions; creation or modifications in recognition systems; mechanisms for increasing or broadening employee responsibilities; and education and training initiatives. They might also include developing partnerships with educational institutions to develop employees and to help ensure the future supply of well-prepared employees.*

4.2 Employee Involvement *(40 pts.)*

Describe the means available for all employees to contribute effectively to the company's quality objectives; summarize trends in involvement.

AREAS TO ADDRESS
a. approaches to group participation such as teams: within functional units; between functional units; and involving suppliers and customers
b. other opportunities for employees to contribute, such as through suggestion systems or hotlines, and how and when the company gives feedback
c. approaches to enhanced employee authority to act (empowerment) such as when quality standards may be compromised; means for encouraging employee innovation; and means for increasing employee responsibilities
d. trends in key indicators of involvement, empowerment, and innovation for all categories of employees
e. principal means the company uses to evaluate the extent and effectiveness of involvement of categories of employees

4.3 Quality Education and Training *(40 pts.)*

Describe how the company decides what quality education and training is needed by employees and how it utilizes the knowledge and skills acquired; summarize the types of quality education and training received by employees in all employee categories.

AREAS TO ADDRESS
a. approach and rationale for deciding what quality education and training, such as training in statistical and other quantitative problem solving methods, is needed by different categories of employees
b. how the company provides on-job reinforcement of the knowledge and skills acquired in education and training
c. summary and trends in types of quality education and training received by each employee category. The summary and trends may address quality orientation of new employees, percent of employees receiving education and training in each category, quality education and training costs per employee, and average hours of quality education and training annually per employee.
d. indicators of effectiveness of the company's education and training activities and how the indicators are used to improve these activities

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4 Employee Recognition and formance Measurement (20 pts.)

Describe how the company's recognition and performance measurement processes support quality improvement; summarize trends in recognition.

AREAS TO ADDRESS

a. key strategies for encouraging contributions to quality including recognition of individuals and groups; how balance is achieved — between individual and group recognition and between individual and group performance — to ensure effective support for company quality improvement efforts

b. how recognition and performance measures reinforce quality relative to other business considerations such as quantity; how employees are involved in the development of measures

c. summary and trends in recognition of individuals and groups, by employee category, for contributions to quality improvement

d. how the company evaluates the effectiveness of its recognition and performance measurement systems, including soliciting feedback from employees, to improve its strategies and methods

4.5 Employee Well-Being and Morale (20 pts.)

Describe how the company safeguards the health and safety of employees, ensures comfort and physical protection, and maintains a supportive work environment; summarize trends in employee well-being and morale.

AREAS TO ADDRESS

a. how well-being and morale factors such as health, safety, satisfaction, and ergonomics are included in quality improvement activities

b. analysis of underlying causes of accidents, work-related health problems, and dissatisfaction, for elimination of adverse conditions

c. mobility, flexibility and retraining in job assignments to support employee development and/or to accommodate changes in technology, improved productivity or changes in work processes

d. special services, facilities and opportunities the company makes available to support employees. These might include one or more of the following: counseling, assistance, recreational or cultural, and non-work-related education

e. how employee satisfaction is determined, evaluated and used in quality improvement

f. trends in key indicators of well-being and morale such as safety, absenteeism, turnover, satisfaction, grievances, strikes and worker compensation. Explain adverse indicators and how problems were resolved or current status. Compare most significant indicators with those of industry averages and industry leaders.

The *Quality Assurance of Products and Services* category examines the systematic approaches used by the company for total quality control of goods and services based primarily upon process design and control, including control of procured materials, parts and services. Also examined is the integration of quality control with continuous quality improvement.

5.1 Design and Introduction of Quality Products and Services
(30 pts.)

Describe how new or improved products and services are designed and introduced to meet or exceed customer requirements and how processes are designed to deliver according to the requirements.

AREAS TO ADDRESS

a. conversion of customer needs and expectations into product and process requirements and/or service quality standards

b. methods and their application for assuring quality in the design, development and validation stages; methods of testing and evaluating products, processes, and services before introduction, including review of designs for feasibility and assessment of key factors in production and use

c. detailed control plan: (1) selecting and setting key process characteristics to be controlled and how they are to be controlled, and (2) service process and delivery plan including selection of key characteristics to be controlled and how they are to be controlled

d. steps taken in design to minimize introduction time

Notes: *(1) In responding to this item, applicants should interpret product and service characteristics broadly. Most companies have both product and service characteristics to consider.*

(2) Depending on their type of business, applicants need to consider many factors in product and service design including health, safety, long-term performance, measurement capability, process capability, and supplier capability. Applicant responses should reflect the requirements of the products and services they deliver.

5.2 Process and Quality Control
(25 pts.)

Describe how the processes which produce the company's products and services are controlled and how the company assures that products and services meet design plans or specifications.

AREAS TO ADDRESS

a. principal approaches the company uses to ensure that processes which produce products and services are adequately controlled

b. principal approaches the company uses routinely to ensure that products and services meet design plans or specifications

c. method for assuring that measurement quality is adequate to evaluate products, processes and services within the limits established in control plans

d. principal approaches to identify root causes of process upsets

e. principal approaches to the design of the measures to correct process upsets, and methods of verifying that the measures produce the predicted results and are effectively utilized in all appropriate units of the company

f. principal approaches of the company to use the information obtained from process and quality control for prevention and quality improvement

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Note: *For manufacturing and service companies with measurement requirements, it is necessary to demonstrate that measurement accuracy and precision meet process and product requirements (measurement quality assurance). For physical, chemical and engineering measurements, indicate approaches for ensuring that measurements are traceable to national standards through calibrations, reference materials or other means.*

` Continuous Improvement Processes, Products and Services (25 pts.)

Describe how products and services are continuously improved through optimization and improvement of processes.

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AREAS TO ADDRESS

a. principal approaches to identify opportunities for continuous improvement of
   processes, including reductions in response times: evaluation of all process
   steps; development and assessment of alternative processes; evaluation of
   new or improved technology; use of competitive and benchmark data
b. methods of process optimization such as controlled experiments
c. method for verifying that improvements produce the predicted results
d. method of integrating continuous improvement with daily operations and routine
   process and quality control and of ensuring effective integration by all
   appropriate units of the company
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5.4 Quality Assessment (15 pts.)

Describe how the company assesses the quality of products, processes, services and quality practices.

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AREAS TO ADDRESS

a. principal approaches the company uses to assess quality, quality systems and
   quality practices such as systems audits, product audits and service audits.
   Briefly describe the approaches and how the validity of assessment tools is
   assured.
b. types and frequencies of assessments and who conducts them: the company,
   customers, government or other
c. how assessment findings are translated into improvements such as in
   processes, practices, training and supplier requirements
d. method for verifying that improvements are made and that they are producing
   the predicted results
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5.5 Documentation (10 pts.)

Describe documentation and other modes of "knowledge preservation" and transfer to support quality assurance, assessment and improvement.

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AREAS TO ADDRESS

a. documentation system supporting quality assurance, assessment and
   improvement; types of documents and types of activities covered; and how
   documents are used such as in standardization, orientation of new employees,
   and training
b. timely update to keep pace with changes in technology, practice and quality
   improvement; disposal of obsolete documents
c. company efforts to improve responsiveness and access of the documentation
   system such as through use of computers and networks
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5 Quality Assurance, Quality Assessment and Quality Improvement of Support Services and Business Processes (25 pts.)

Describe how the quality of support services and business processes is assured, assessed and improved.

AREAS TO ADDRESS

a. how the quality of support services and business processes is assured such as through process and quality control and quality assessment; how and how often quality is assessed through audits, reviews or other means

b. how support services and business processes are continuously improved

c. current strategies, efforts and plans to increase and improve the participation of support services in quality activities

Notes: *(1) Examples of support services might include finance and accounting, software services, sales, marketing, information services, purchasing, personnel, legal services, maintenance, plant and facilities management, research and development, and secretarial and other administrative services.*

(2) The purpose of this Item is to permit applicants to highlight separately the quality assurance, quality assessment and quality improvement activities for functions that support the primary processes through which products and services are produced. Together, Items 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 and 5.7 should cover all operations, processes and activities of all work units. However, the selection of support services and business processes for inclusion in this Item depends on the type of business and quality system, and should be made by the applicant.

5.7 Quality Assurance, Quality Assessment and Quality Improvement of Suppliers (20 pts.)

Describe how the quality of materials, components, and services furnished by other businesses is assured, assessed and improved.

AREAS TO ADDRESS

a. process used to assure that the company's quality requirements are being met by suppliers by means such as audits, inspections, certification and testing

b. strategy and current efforts to improve the quality and responsiveness of suppliers, such as through partnerships, training, incentives and recognition, and to improve supplier selection

Note: *The term supplier refers to external providers of goods and services.*

6.0 Quality Results

The **Quality Results** category examines quality levels and quality improvement based upon objective measures derived from analysis of customer requirements and expectations and from analysis of business operations. Also examined are current quality levels in relation to those of competing firms.

6.1 Quality of Products and Services (50 pts.)

Summarize trends in quality improvement based upon key product and service quality measures derived from customer needs and expectations.

AREAS TO ADDRESS

a. summarize trends in key product and service quality measures

b. explain adverse trends and outline what steps the company has taken or plans to take to prevent recurrence

Note: *Key product and service quality measures are the set of principal measurable characteristics of products and services, including delivery and after-sales services, which, taken together, best represent the* factors that predict customer satisfaction and quality in customer use. *Examples include measures of accuracy, reliability, timeliness, performance, behavior, delivery, documentation and appearance. Customer satisfaction or other customer data should not be included in responses to this Item.*

` Comparison of Quality results *(35 pts.)*

Compare the company's current quality levels with industry averages, industry leaders and world leaders, based upc.¹ the key product and service quality measures reported in Item 6.1.

AREAS TO ADDRESS

a. bases for comparison such as independent reports, company evaluations, laboratory testing, and benchmarks

b. current quality level comparisons with industry averages, industry leaJers, and world leaders or other competitors in the company's key markets

c. current levels and trends in relation to the company's quality leadership objectives and plans. Explain adverse trends.

6.3 Business Process, Operational and Support Service Quality Improvement *(35 pts.)*

Summarize trends in quality improvement, based upon key measures of business processes, operations and support services.

AREAS TO ADDRESS

a. trends in key operating quality measures for business processes, operations which produce the company's products and services, and support services

b. explain adverse trends and outline what steps the company has taken or plans to prevent recurrence

c. comparisons with industry averages, industry leaders and world leaders when such data are available. Briefly explain adverse indicators.

Note: *Key operating quality measures are the set of principal measurable characteristics of processes such as use of manpower, materials, energy and capital. Appropriate measures relate to lead times, yields, waste, inventory levels, rework of products and repeat of services, first-time success rates, environmental improvements, and other areas.*

⸱ Supplier Quality Improvement *(30 pts.)*

Summarize trends in improvement in quality of supplies and services furnished by other companies, based upon key measures of product and service quality.

AREAS TO ADDRESS

a. trends in key indicators of the quality of supplies and services. Briefly explain adverse trends.

b. brief explanation of current supplier quality and trends in terms of the company's key requirements and actions to improve supplier quality

c. highlight awards and recognition the company's key suppliers have received and the role the company played in helping suppliers improve their quality

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The **Customer Satisfaction** category examines the company's knowledge of the customer, overall customer service systems, responsiveness, and its ability to meet requirements and expectations. Also examined are current levels and trends in customer satisfaction.

7.1 Knowledge of Customer Requirements and Expectations *(50 pts.)*

Describe how the company determines current and future customer requirements and expectations.

AREAS TO ADDRESS

a. process for identifying market segments, customer and potential customer groups, including customers of competitors, and their requirements and expectations through surveys, interviews and other contacts. (Include information on frequency, duration, objectivity, and depth of data collection and who collects such information.)

b. process for identifying product and service quality features and the relative importance of these features to customers or customer groups

c. cross comparisons with other key data and information such as complaints, losses and gains of customers, and performance data that may yield information on customer requirements and expectations and on key product and service features

d. how the company evaluates and improves the effectiveness of its processes for determining customer requirements and expectations such as improved surveys, other customer contacts, analysis, or cross comparisons

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Notes: *(1) The buyer of a product or service may not be the end user. Thus, identifying customer groups needs to take into account both the buyer and the end user.*

(2) Product and service features refer to all important characteristics experienced by the customers, including delivery and after-sales service, that may bear upon customer preference and customer view of quality. These features also include the overall purchase and ownership experiences.

7.2 Customer Relationship Management *(30 pts.)*

Describe how the company provides effective management of its relationships with customers and how it ensures continuous improvement of customer relationship management.

AREAS TO ADDRESS

a. process for ensuring that customer service requirements are understood and responded to throughout the company

b. means for ensuring easy access for customers to comment, seek assistance, and complain

c. follow-up with customers on products and services to determine satisfaction and to gain information for improvement

d. empowering customer-contact employees to resolve problems promptly and to take extraordinary measures when appropriate

e. special hiring requirements, attitudinal and other training, recognition, and attitude/morale determination of customer-contact employees

f. technology and logistics (infrastructure) support to enable customer-contact employees to provide effective and timely customer service

g. analysis of complaint information, gains and losses of customers, and lost orders to assess costs and market consequences for policy review

h. process for evaluating and improving services to customers

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7.3 Customer Service
ndards *(20 pts.)*

.scribe the company's standards governing the direct contact between employees and customers, and how these standards are set and modified.

AREAS TO ADDRESS

a. selection of well-defined, objectively-measurable standa·ds derived from customer requirements and expectations

b. employee involvement in developing, evaluating and improving or changing standards

c. deployment of requirements and/or standards information to all company units to ensure effective support for customer-contact employees who are expected to meet the company's customer-service standards

d. tracking to ensure that key service standards are met

e. how service standards are evaluated and improved

7.4 Commitment to Customers
(20 pts.)

Describe the company's commitments to customers on its explicit and implicit promises underlying its products and services.

AREAS TO ADDRESS

a. product and service guarantees and product warranties: comprehensiveness, conditions, understandability and credibility

b. other types of commitments the company makes to promote trust and confidence in its products and services

c. how improvements in the company's products and/or services over the past three years have been translated into changes in guarantees, warranties and other commitments

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¯٥ Complaint Resolution for
ality Improvement *(30 pts.)*

Describe how the company handles complaints, resolves them, and uses complaint information for quality improvement and prevention of recurrence of problems.

AREAS TO ADDRESS

a. process for ensuring that formal and informal complaints and critical comments made to different company units are aggregated for overall evaluation and use wherever appropriate throughout the company

b. process for ensuring that complaints are resolved promptly by customer-contact employees; summarize indicators of improved response including trends in response time

c. process for analyzing complaints to determine underlying causes and using this information to make improvements such as in processes, standards, and information to customers

d. process for evaluating the company's handling of complaints to improve both the response to complaints and the ability to translate the findings into preventive measures

⁻⁵ Customer Satisfaction termination *(50 pts.)*

Describe the company's methods for determining customer satisfaction, how this information is used in quality improvement, and how methods for determining customer satisfaction are improved.

AREAS TO ADDRESS

a. types and frequency of methods used including procedures to ensure objectivity and validity

b. how satisfaction is segmented by customer groups, if appropriate, and how satisfaction relative to competitors is determined

c. correlation of satisfaction results with other satisfaction indicators such as complaints and gains and losses of customers

d. how information on key products and service quality features that determine customer preference is extracted from customer satisfaction data

e. how customer satisfaction information is used in quality improvement

f. process used to evaluate and improve methods for determining customer satisfaction

7.7 Customer Satisfaction Results *(50 pts.)*

Briefly summarize trends in the company's customer satisfaction and in indicators of adverse customer response.

AREAS TO ADDRESS

a. trends in customer satisfaction and key customer satisfaction indicators for products and services segmented by customer groups, if appropriate

b. trends in major adverse indicators such as complaints, claims, refunds, mandatory recalls, returns, repeat services, replacements, downgrades, repairs, warranty costs and warranty work. Briefly explain adverse trends or data points.

Notes: *(1) Adverse indicators to be summarized in this Item relate to actions initiated by customers or on behalf of customers such as by government agencies or other third parties. Trends in adverse indicators where the action, such as recall or repeat service, is initiated by the company itself should be included in Item 6.1.*

(2) If the company has received any sanctions under regulation or contract over the past three years, include such information in this Item. Briefly describe how sanctions were resolved or current status.

7.8 Customer Satisfaction Comparison *(50 pts.)*

Compare the company's customer satisfaction results and recognition with those of competitors which provide similar products and services.

AREAS TO ADDRESS

a. comparison of customer satisfaction results with industry averages, industry leaders and world leaders, or with other competitors in the company's key markets

b. surveys, competitive awards, recognition and ratings by independent organizations including customers. Briefly explain surveys, awards, recognition and ratings.

c. trends in gaining or losing customers. Briefly explain sources of gains and losses.

d. trends in gaining and losing market share relative to major competitors, domestic and foreign. Briefly explain significant changes in terms of quality comparisons.

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Appendix E

Total Quality Tools and Techniques

IMPROVEMENT TOOLS

This section provides some structured tools that have proved highly valuable in quality improvement. Descriptions are necessarily brief, aimed at serving as a resource foe people familiar with these tools who are looking for specific techniques to help implement the improvement process. They fall into four main categories:

* Flow charting

* Idea-generating techniques

    *Imagineering

    *Brainstorming

    *Nominal group technique

* Problem-analysis techniques

    *Cause and effect analysis

    *Force field analysis

* Statistical techniques

    *The Pareto diagram

    *The histogram

    *Control charts

        - Attributes control charts

        - Variables control charts

            - The x-R control chart

            - The run chart

FLOW CHARTS

What It Is

A flow chart is diagram that shows all the major steps of a process. Preparing a flow chart is one of the first things to do in analyzing a process. It uses a set of standard symbols to document the process steps, presenting them in an easy-to-understand pictorial format.

Why It Is Useful

Through flow charting, team members can better understand the processes they are responsible to accomplish. The flow chart demonstrates how the different steps in a process are related to each other. It provides insight for identifying valve-added activities, control points, data collection points, inefficiencies in the work flow, and obvious key points in the process. It is also an excellent training tool for new employees.

When It Is Used

*   To analyze relationships between sequential activities
*   As a technique for fully understanding problems
*   As a source if information for problem identification and resolution
*   To analyze customer or supplier activities

How It Is Done

1. Bring together representatives from all departments responsible for the process so that they can perform the analysis together.
2. Title the chart with the name of the process analyzed. If there is more than one, diagram them on separate charts and number them sequentially.
3. List all major steps involved in the process sequentially. In some cases, it may be easier to start at the end of the process and work toward the beginning. However, the flow is always shown beginning at the top left corner of the chart. Make sure process boundaries are clearly defined.
4. Using the set of symbols draw the flow diagram. Concentrate on major processes, so that the flow chart will fit on a single page if possible. The chart should represent the way things are, not the way they are supposed to be.
5. When processes are complex, create second-and third-tier flow charts as necessary to adequately break down all major processes into the component parts.

IDEA-GENERATING TECHNIQUES

Imagineering

What It Is

Imagineering is bringing together the relevant personnel to visualize what an operation can be without waste. It creates an ideal target for improvement activities to aim at.

Why It Is Useful

In providing a target for improvement activities, imagineering focuses the improvement effort, assists the will and belief of those involved in the effort, and shows them where to work to achieve the improvement.

When It Is Used

* At the outset of an improvement effort
* Whenever process conditions change
* Whenever the improvement effort is refocused

How It Is Done

1. Draw a flow chart of the steps the process actually follows.
2. Draw a flow chart of how the process would function it everything went right.
3. Compare the two charts to determine where they are different.
4. Target these areas of difference for improvement efforts.

BRAINSTORMING

What It Is

Brainstorming is an idea-generating technique. A group of people is given a problem to solve. Participants have time to deliberate and are then asked for their responses.

Why It Is Useful

Brainstorming can produce a wide variety of ideas in a short period of time. It provides a mechanism for full participation of team members while documenting what the team knows as a whole. It stimulates the team's creativity and commitment level.

When It Is Used

* To collect improvement opportunities for problem identification
* To establish goals and objectives
* To identify inputs/outputs, subactivities and problem areas when constructing a flow chart
* To identify root causes when constructing a cause and effect diagram
* To suggest possible solutions

How It Is Done

1. Select an appropriate meeting place where the team can function undisturbed.
2. Clearly state the problem or topic and make sure all members have a clear understanding of it.
3. Ask each member of the team to present his/her idea, one at a time, in sequence. Team members should pass if they don't have an idea.
4. Have a recorder write the topic and all suggestions on a flipchart as they are generated so everyone can see them. Often, the sight of some items will trigger other ideas or measures not previously considered.
5. Record suggestions exactly as given. Make no judgements until the process has been completed, when no more ideas are being generated.
6. Encourage everyone to participate.
7. After all ideas are listed, check each one with the group for clarification.
8. Have the group members select the ideas they agree are worth working on. This method is relatively quick and gives everyone a chance to contribute.

NOMINAL GROUP TECHNIQUE

What It Is

Nominal group technique (NGT) is very similar to brainstorming except that team members are given time to write down their ideas first. Then, in round-robin fashion, members of the group each offer one idea in a short phrase, which is recorded on a flipchart or board.

Why It Is Useful

NGT is especially used when a large number of ideas are to be generated in a short period of time.

How It Is Done

1. Select an appropriate meeting place where the team can function undisturbed.
2. Clearly state the problem or topic and make sure all members have a clear understanding of it. Write it on a flipchart where all team members can see it.
3. Ask all team members to write their ideas on the problem to topic. This should take approximately 10 minutes.
4. Ask each member of the team to present his/her idea, one at a time, in sequence. Team members should pass if they don't have an idea.
5. Have a recorder write the topic and all suggestions on a flipchart as they are generated so everyone can see them.
6. Record suggestions exactly as given. Make no judgements until the process has been completed, when no more ideas are being generated.
7. Encourage everyone to participate.
8. After all ideas are listed, check each one with the group for clarification and evaluation.
9. Have participants silently examine the list and select their top three, five, or seven ideas to work on (20% to 25% of the list.) As they call out their top priority items, records them on the flipchart.
10. Review the top five priority items to develop consensus. Develop an action plan to accomplish them.

PROBLEM ANALYSIS TECHNIQUES

Cause and Effect Analysis

What It Is

The cause and effect diagram (fishbone diagram) is a graphic tool to help analyze problems. It uses lines and symbols to present the relationships between effects and causes.

Why It Is Useful

This technique helps a group reach a common understanding of a problem while exposing gaps in members' existing knowledge of the problem. It can help them reduce the incidence of subjective decision-making and can be applied to all aspects of the process.

When It Is Used

After a problem area is selected and carefully defined and data are collected on potential causes, a cause and effect diagram can be created to aid the team in systematically analyzing cause and effect relationships and identifying root causes of the problem.

How It Is Done

1. Name the effect experienced as a result of the problem. This is a result of the problem. This is often obvious from the data. Put it in a box and draw an arrow leading to it. The arrow represents the direction of influence.
2. Decide what the major causes are. Write these in boxes placed parallel to and some distance from the main arrow. Then connect the boxes to the main arrow by arrows slanting toward it.
3. Brainstorming for causes. Add these to the chart as arrows leading to the major cause arrows. If one minor cause leads to another minor cause, add it as an arrow at that point.
4. When the cause and effect diagram has been completed, circle the root causes and prioritize them. Then verify the impact by gathering data. Cause and effect analysis is very useful at generating a list of potential solutions. Verification of root causes can lead to a solution.

STATISTICAL METHODS

What They Are

Statistical methods use mathematical techniques to collect and analyze data so that the data can be used to solve practical problems. These methods can be applied to practically anything such as problems in engineering, operations, manufacturing, accounting, management or other areas.

Why They Are Useful

Statistical methods are used to study and control the variables of a process so that it can be modified to produce the best possible output. They distinguish between the common and special causes that effect process performance. Common causes are inherent in normal machine variability, human measurement error and other variations. Common causes are random in nature and are often minor in significance. Special causes are the result of an abnormality in the system that prevents the process from becoming stable. Use of statistical techniques makes it possible to identify ways to decrease the variability in a process and increase consistency or "control" of a process.

A wide variety of statistical techniques is available to help accomplish quality improvement objectives. A limited number of these techniques are described below. However, it is usually advisable to contact a statitcian at the onset of a project to determine the most efficient and cost-effective ways of making use of these tools and techniques. (BRC Quality Assurance has a statistical consultation group.)

THE PARETO DIAGRAM

What It Is

A Pareto diagram is a specialized type of column graph used to prioritize problems and/or data. The chart is arranged with the highest bar on the left and the others in decreasing order to the right.

Why It Is Useful

The Pareto Principles states that a few causes typically account for most problems, while other causes are generally less important. This is often referred to as the 80-20 rule, where 80% of the problems result from 20% of the causes. The Pareto diagram enables us to separate present problems from future opportunities and to focus on the highest leverage items for immediate improvement.

When It Is Used

Pareto analysis is a highly useful step when selecting problems/identifying improvement opportunities, searching out main causes of problems, and prioritize solutions. Pareto diagrams are especially valuable when they are plotted before and after a quality

improvement project to show what progress has been made.

How It Is Done

1. Identify all possible problems and collect data. Find out how
    frequently these problems occur and the magnitude of the
    resulting costs.
2. Construct a table, listing the problems from the greatest to the
    smallest by the number of errors, the total cost of errors, etc.-
    whatever is most relevant to the problem being solved.
3. Prepare the framework for the Pareto diagram, listing costs or
    incidence on the left side and percentage on the right side.
4. Plot the data, placing the item with the greatest cost or
    incidence as the leftmost column, the item with second highest
    cost or incidence next, etc. Place a dot in line with the right
    side of each column. The height of the dot should equal
    cumulative height of all the columns to the left of that column.
    Connect these dots.
5. Complete the diagram with labels and a legend, including the
    source of the data, where it was collected, who collected it and
    any other relevant data. The number at the top of the diagram
    (across from 100%) is the total of all columns.

Because the Pareto diagram makes it clear which of the problems are
the "vital few," it is one of the most effective tools not only for
finding these problems but also for estimating the magnitude of
benefits possible.

THE HISTOGRAM

What It Is

A histogram is a special type of column graph that displays the
variability within a process.

Why It Is Useful

The histogram shows an easily comprehensible picture of how a process
is currently operating. It also provides a quick method for viewing
how their improvement effort in any area is going. A histogram can
be used to compare actual measurements with an expected distribution.
Unusual or "suspicious" patterns may indicate that a process needs
investigation to determine its degree of stability.

When It Is Used

Histograms can be plotted whenever it is desired to obtain a quick
overview of the variability within a process. This is often done
before selecting particular processes for improvement. Histograms can
also be made periodically throughout the improvement process to
enable the team to see changes.

How It Is Done

Making a histogram begins with collecting the data , which can be done on a special check-sheet designed for the e type of data to be collected.

The range of the data is determined by subtracting the smallest measurement from the largest. This range is then divided into smaller categories, and the number of data points inside each category is determined. The larger the number of data points collected, the larger the number of subcategories. This information is then plotted as vertical bars on a graph.

A normal distribution has three distinguishing characteristics: it is symmetrical, is bell-shaped, and has a unimodal distribution. Symmetrical means that each half of the curve is a mirror image of the other. Bell-shaped means that the curve has more values near the middle of the distribution. The more data you collect, the more the histogram will usually approximate a normal curve - if the causes of variation are random.

CONTROL CHARTS

What They Are

Control Charts show performance of a process over time and are used to determine whether that process is consistent and operating in statistical control. Of the many possible kinds of control charts, there are two main types: control charts for attributes and control charts for variables. Attributes control charts are used you plot counts or percentages of summaries of "go/no go" variables such as whether a product is in or out of tolerance. Variables control charts are used to plot specific measurements of a variable characteristic such as size or weight of the measured item.

Why They Are Useful

Control charts graphically show the relationship of samples to the average process values and variability. They provide significant information about the nature of variation in a process. They identify changes in the process, which are indicated by drift, a shift in the center line or average value, or increased variability. Changes in the process immediately reflected on the control chart.

When They Are Used

Control charts are used to provide immediate feedback about the behavior of a process. They are, in essence, static pictures of the variation that is occurring. As such, they allow the process to be monitored, with the goal of reducing the variation.

How It Is Done

The general procedure for constructing a control chart is a four-step process as follows:
1. Take a series of samples from the process. The number of items examined should be the same in each example.

2. While collecting data, maintain a log of any known process
changes such as a shift change, of tools, different batch of raw
materials that take place.
3. Compute trial control limits.
4. Chart the data against the trial control limits to determine if
any of the samples are out of control; i.e., outside or beyond
the control limit lines.

If no samples are out of control, the process is said to be in
control and free of special causes. In this case, the task is then to
establish control charts to monitor the process to make sure it stays
in control. Efforts are then turned to reducing the common causes of
variation.

If the process is out of control, the stage is set to investigate the
out-of-control data points and find the special causes that produced
them. Efforts can then be made to eliminate the special causes.

ATTRIBUTES CONTROL CHARTS

What They Are

Attributes data are typically contained by counting the number of
items in one or two categories. The categories represent the presence
or absence of the characteristic being examined; for example, a part
may be conforming to specifications or not conforming. A light bulb
either lights up or it does not light. In attributes data, the item
either has the characteristic or it doesn't.

Why They Are Useful

Attributes control charts are especially useful in analyzing "white
collar" applications such as document errors, productivity,
efficiency, backlog improvement and other forms of manpower analysis.
These charts are often inexpensive to create and are particularly
practical when there are many processes to monitor.

When They Are Used

There are four main attributes control charts: two types that count
defective units and two that count the number of individual defects
(rather than defective units). The distinction between counting
defects and counting defective units is that counting defects often
provides a more precise picture of quality than counting the number
of defective units, since there may be a large number of defects (or
only one) in a part found to be defective.

There two types of attributes control charts that count defective
units are the np and the p charts. The np chart plots the number of
defective units in a sample, and the p chart plots the percentage of
defective units. In general, the np chart is used when the sample
size is constant (such as when 20 units are evaluated each day), and
Th. e p chart is used when the same size varies (such as when 10
units are evaluated one day, 50 the next, etc.).

The two types of attributes control charts that count the number of individual defects are the c chart and the u chart. The c chart plots the number of defects per sample, and the u chart plots the number of defects per unit. In general, the C chart is used when the sample size is constant, and the u chart is used when the sample size varies (such as when different-size documents are compared).

VARIABLES CONTROL CHARTS

What They Are

Variables control charts are statistical charts based on numerical measurements. The measurable quality that is used for a particular chart is referred to as the variable. Control charts for variables are used extensively and generally lead to more efficient and accurate data about the process being studied than do attribute charts.

There is a wide variety of variables control charts that can be Constructed, depending on the process being observed; however, for the purpose of quality improvement efforts, two main types of variable control charts are frequently used - the x and R charts. The bar above the x means that an average is being calculated and charted, and the chart is called the "x-bar" chart. The R stands for range. The two charts can be combined into a single chart, known as the x-R control chart. The x chart plots the average (or mean) of the measurements in a sample.

The x-R Control Chart or "X-Bar-R" Chart

Why It Is Useful

The main advantage of the x-R control chart is that it gives specific data about a single characteristic of a product or process, which provides clues to help isolate the problem. A disadvantage is that if the x-R chart is used to measure products or processes that have many variables, many charts are required, one for each variable considered important. This can often be very costly, so the x-R control chart is often used in conjunction with attributes control charts.

When It Is Used

The x-bar-R control chart is used whenever possible, since it provides more information on the variation within a process than most of the other improvement tools

How It Is Done

1. Collect the data. Ideally, more than 100 data points are used (for example, five data points each day for 20 days). Practicality or time met reduce this number somewhat.
2. Compute the mean or average value for each of the five data points collected each day. This is called the x.
3. Compute the range, or R. For each= sample of five data points collected each day, this is the difference between the high

data and the low data point.

4. Plot the x and R values on the x-R control chart. The x plot is generally located above the R plot.
5. Compute the central line for each of the x and the R graphs. This is done by adding up the values of all the x data points and dividing by the number of x data points (if the sample size is consistent), and doing the same thing for R data points. Draw these two central lines on the control chart.
6. Compute the control limits by applying the appropriate formulas.
7. Compute the R control limits the same way. Draw these lines on the control chart.
8. Complete the x-R chart by adding all needed identification to the chart. Include a footnote to show the number of items in each sample.

The Run Chart

A simpler variation of the control chart is the run chart. This is a simple method for evaluating the stability of a process and is often constructed while the process is taking place. This type of chart is used extensively, but it is far less useful than a control chart because it does not define in- and out-of-control conditions. The use of statistical process control can be expanded considerably, at least at first, by adding control limits to existing run charts to minimize time spent on solving nonproblems and maximize efforts on real ones.

How It Is Done

To construct a run chart, collect a series of data points on the process and plot them in sequence on the chart. When 20 data points have been plotted compute the central line. The central line is the average of the plotted points. Then, as you continue to plot further data points, you can monitor the process. It is expected that the points will move across the central line (or average) in a random yet frequent manner.

From probability theory, the likelihood of seven or more consecutive data points occurring on one side of the central line is very small. When such a sequence occurs, it suggests that a change in the process has occurred. Investigate the change(s) that caused it. This may represent either deterioration of the process or an increase in quality. The run chart is also valuable in providing a pictorial view of the stability of a process. As such, it allows variations to be detected quickly for corrective action. However, it doesn't necessarily show when corrective action is required.

GUIDELINES FOR USING CONTROL CHARTS

Deciding when to use control charts and what type of control chart to use isn't always easy. Since it is generally not feasible to chart every variable or every process, it is important to give some consideration to determining the appropriate processes to monitor. The following steps can be useful:

1. Flow chart the process. Determine the critical elements of the process. Use Pareto analysis to set priorities.
2. Choose the elements to be monitored. Your focus should be on preventing defects rather than on just detecting them.
3. Decide which type of control chart is applicable
4. Collect the necessary data, choosing the appropriate sample size, etc.
5. Construct a control chart with at least 20 data points. Analyze to see if the process is in control by calculating central line and control limits.
6. Continue monitoring the process, while consultants seeking ways to reduce common and special causes of variation. Review the results with a statistician and adjust control limits and central line as appropriate.
7. Periodically reevaluate the economics of monitoring according to the type of control chart used and the results being achieved.

Control charts are especially valuable when used in conjunction with Pareto diagrams and frequency distributions. The Pareto diagram determines the frequency of the problem and may suggest what should be changed first. The histogram or frequency distribution is used to determine if more than one variable is affecting the process and to verify assumptions made about the process. Use of the control chart completes the picture by providing a time record of process stability. Together, these three tools provide a highly effective method for achieving continuous quality improvement.

Appendix F

Navy Medical Department
Strategic Goals

NAVY MEDICAL DEPARTMENT STRATEGIC GOALS

STRATEGIC GOAL 1: The Navy Medical Department will embrace and implement Total Quality principles through the commitment of its leadership to transform the internal culture of the entire organization to one dedicated to continuous quality improvement.

STRATEGIC GOAL 2: The Navy Medical Department will guarantee timely access to the finest quality health care for all those we serve through effective management and coordination of resources.

STRATEGIC GOAL 3: Navy Medicine will serve as an aggressive advocate and primary consultant for all wellness/health promotion programs in the U.S. Navy and Marine Corps.

STRATEGIC GOAL 4: We will maintain a dynamic capability to meet the medical requirements of the Navy and Marine Corps in support of their worldwide missions.

STRATEGIC GOAL 5: We will develop an informed, interactive resource/acquisition process that acknowledges requirements, articulates them in the most defensible terms, and applies the resultant resources in the most effective manner.

STRATEGIC GOAL 6: The Navy Medical Department will provide the very best education and training to enable its personnel to reach their full potential in support of the Navy and Marine Corps mission.

STRATEGIC GOAL 7: We, the Navy Medical Department, view effective communication as vital for our people to realize our vision. We will create an environment in which we will continually strive to improve the information flow at all levels, openly seeking new ways to share information and eliminate barriers to communication.

STRATEGIC GOAL 8: We, the Navy Medical Department, will respond to the needs and expectations of our customers in a shared, supportive, and comprehensive manner at all times.

STRATEGIC GOAL 9: We will make it known to all that the Department of the Navy operates a health care delivery system second to none.

Appendix G

National Naval Medical Center Organization Manual
(Excerpt)

NNMCINST 5450.1

ORGANIZATION MANUAL
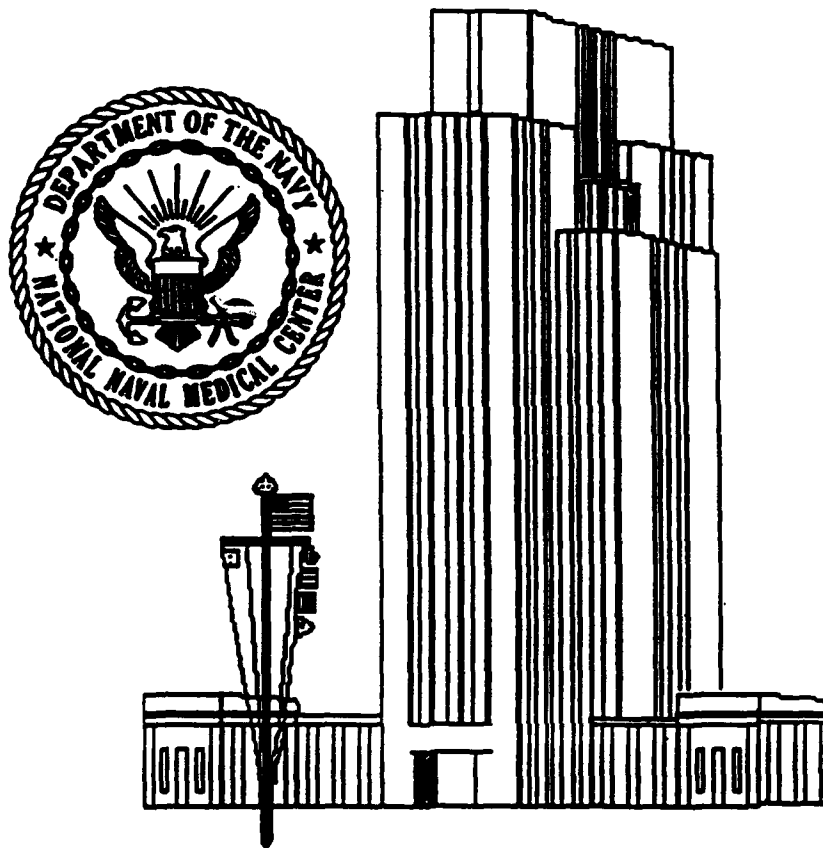
NATIONAL NAVAL MEDICAL CENTER
BETHESDA, MARYLAND

DEPARTMENT OF THE NAVY

NATIONAL NAVAL MEDICAL CENTER

BETHESDA. MARYLAND 20814-5000

IN REPLY REFER TO

NNMCINST 5450.1
01

02 MAY 1990

NNMC INSTRUCTION 5450.1

From: Commander

Subj: NATIONAL NAVAL MEDICAL CENTER ORGANIZATION MANUAL

Ref: (a) NAVMEDCOMINST 5450.1

Encl: (1) National Naval Medical Center Organization Manual

1. Purpose. To promulgate the mission, functions, and organizational structure of this command while ensuring compliance with reference (a).

2. Cancellation: NMCNCRINST 5450.1 and NHBETHINST 5450.1.

3. Scope: Enclosure (1) is the approved organization for the command.

4   Action:

    a. Enclosure (1) is effective immediately.

    b. The Commander will approve all changes.

    c. All Directors and Department Heads shall bring into compliance those areas under their cognizance. When changes are required to increase the effectiveness and efficiency of the organization, the cognizant Director will submit the change to the Director for Hospital Administration.

                              D. F. Hagen

Distribution:

List I, III, IV

Copy to:

BUMED (MED-09)

CHART 1: NATIONAL NAVAL MEDICAL
CENTER ORGANIZATION

13. Conducts selective rotation of personnel for education and training purposes and to maximize efficient and effective use of health care assets.

14. Provides administrative and logistical support to the Navy Clinical Investigation Program as directed.

15. Negotiates and executes Memoranda of Understanding (MOUs) and Interservice Support Agreements (ISSAs) for the purpose of mutual education, training, or support services.

16. Conducts the Decedent Affairs Program under the general supervision of the BUMED as outlined in current directives.

17. Provides medical equipment maintenance and repair services to assigned health care treatment facilities in the local area as required or requested.

18. Operates equal opportunity programs in accordance with existing laws and regulations.

19. Maintains a liaison with and provides naval representation to various military, governmental, commercial, scientific, or professional committees, groups, and organizations with regard to health care and related subjects as required.

20. Develops plans, objectives, priorities, procedures, and standards to ensure that the health care requirements of the Navy and Marine Corps units of the operating forces, shore activities and other authorized personnel within the assigned area are met in an effective, efficient, and timely manner.

21. Ensures operational disaster plans for the command are in place and functional, including procedures for care of mass casualties.

22. Budgets for and designates resource and manpower levels for the NNMC.

23. Operates a budget execution system and ensures that financial accountability is maintained for the command.

24. Operates the Offices of Medical and Dental Affairs to manage the non-naval medical and dental care program.

25. Provides support as prescribed in the Board of Visitors charter.

Appendix H

Climate version
of the
Quality and Productivity Self-Assessment Guide
for Defense Organizations

CLIMATE

A list of statements will be presented. Use the scale in the box to indicate your answers. There are no right or wrong answers. Circle the number 1, 2, 3, 4, 5, or 6 that you feel best indicates your extent of agreement with the statement.

> 1. strongly disagree
> 2. disagree
> 3. somewhat disagree
> 4. somewhat agree
> 5. agree
> 6. strongly agree

1. People in this organization are aware of its overall mission.

   1 2 3 4 5 6

2. In general, this organization's customers believe that we care about what they think.

   1 2 3 4 5 6

3. People in this organization are aware of how their jobs contribute to the organization's mission.

   1 2 3 4 5 6

4. It's in everyone's best interests that this organization be successful.

   1 2 3 4 5 6

5. People in this organization are aware of how the organization's mission contributes to higher level (Defense) (Army) (Navy) (USMC) (Air Force) (Agency) missions and national well-being.

   1 2 3 4 5 6

6. In general, this organization's customers would not "go elsewhere" even if it were possible.

   1 2 3 4 5 6

People in this organization:

7. try to plan ahead for changes (such as in policy)
   that might impact our mission performance.

   1 2 3 4 5 6

8. try to plan ahead for technological changes
   (such as new developments in computer software)
   that might impact our mission performance.

   1 2 3 4 5 6

9. regularly work together to plan for
   the future.

   1 2 3 4 5 6

10. see continuing improvement as essential.

    1 2 3 4 5 6

11. care about what will happen to the
    organization after they are reassigned.

    1 2 3 4 5 6

---

12. Creativity is actively encouraged in this
    organization.

    1 2 3 4 5 6

13. Innovators are the people who get ahead
    in this organization.

    1 2 3 4 5 6

---

14. The quality of our work is second only to
    mission accomplishment as the overriding
    focus of this organization.

    1 2 3 4 5 6

15. Every member of this organization is
    concerned with the need for quality.

    1 2 3 4 5 6

16. Continuous quality improvements within this
    organization can lead to more productive use
    of our resources.

    1 2 3 4 5 6

17. People in this organization know how to define
    the quality of what we do.

    1 2 3 4 5 6

18. Every member of this organization needs to
    contribute to quality improvement.

    1 2 3 4 5 6

---

1. strongly disagree	
2. disagree	
3. somewhat disagree	
4. somewhat agree	
5. agree	
6. strongly agree	

People in this organization:

19. live up to high ethical standards.	1 2 3 4 5 6
20. like to do a good job.	1 2 3 4 5 6
21. emphasize doing things right the first time.	1 2 3 4 5 6

The leader(s) in this organization (people at the highest level):

22. are committed to providing top quality services/products/work.	1 2 3 4 5 6
23. regularly review the quality of work produced.	1 2 3 4 5 6
24. ask people about ways to improve the work produced.	1 2 3 4 5 6
25. follow-up on suggestions for improvement.	1 2 3 4 5 6

The leader(s) in this organization (people at the highest level):

26. set examples of quality performance in their day to day activities.	1 2 3 4 5 6
27. regularly review the organization's progress toward meeting its goals and objectives.	1 2 3 4 5 6
28. attempt to find out why the organization may not be meeting a particular goal/objective.	1 2 3 4 5 6

People in my work unit:

29. turn to their supervisors for advice about how
to improve their work. -   1 2 3 4 5 6

30. know that their supervisors will help them find
answers to problems they may be having.   1 2 3 4 5 6

31. are challenged by their supervisors to find ways
to improve the system.   1 2 3 4 5 6

The supervisors in my work unit:

32. make the continuous improvement of our work
top priority.   1 2 3 4 5 6

33. regularly ask our customers about the quality of
work they receive.   1 2 3 4 5 6

---

34. The structure of our organization makes it easy
to focus on quality.   1 2 3 4 5 6

35. The way we do things in this organization is
consistent with quality.   1 2 3 4 5 6

---

36. People in my work unit understand how
a quality emphasis leads to more productive
use of resources.   1 2 3 4 5 6

37. People in my work unit can describe the
organization's quality and productivity policy.   1 2 3 4 5 6

4

38. People in my work unit believe that quality and productivity improvement is their responsibility.   1 2 3 4 5 6

39. People in my work unit take pride in their work.   1 2 3 4 5 6

40. People in my work unit share responsibility for the success or failure of our services/products.   1 2 3 4 5 6

41. People in my work unit believe that their work is important to the success of the overall organization.   1 2 3 4 5 6

---

42. We have good relationships between departments in this organization.   1 2 3 4 5 6

43. Co-workers in this organization cooperate with each other to get the job done.   1 2 3 4 5 6

44. A spirit of cooperation and teamwork exists in this organization.   1 2 3 4 5 6

45. We have good relationships with other organizations that we work with.   1 2 3 4 5 6

---

46. Supervisors in my work unit request employee opinions and ideas.   1 2 3 4 5 6

47. People in my work unit are involved in improving our services/products/work.   1 2 3 4 5 6

---

1. strongly disagree
2. disagree
3. somewhat disagree
4. somewhat agree
5. agree
6. strongly agree

48. We have the appropriate personnel in my work unit to get the job done properly.

    1 2 3 4 5 6

49. The work goals or standards in my work unit are generally fair.

    1 2 3 4 5 6

50. The supervisors in my work unit do a good job of setting work expectations.

    1 2 3 4 5 6

---

51. People in my work unit are friendly with one another.

    1 2 3 4 5 6

52. People in my work unit enjoy their co-workers.

    1 2 3 4 5 6

---

53. We have the right tools, equipment, and materials in my work unit to get the job done.

    1 2 3 4 5 6

54. The materials and supplies we need in my work unit are delivered on time and as ordered.

    1 2 3 4 5 6

55. The distribution of work among the people in my work unit is well balanced.

    1 2 3 4 5 6

56. In my work unit, we have enough time to perform our jobs in a professional manner.

    1 2 3 4 5 6

57. My work unit is structured properly to get the job done.

    1 2 3 4 5 6

---

58. People in my work unit are rewarded
for good work.   1 2 3 4 5 6

59. People in my work unit are paid fairly for the
work that they do.   1 2 3 4 5 6

60. Attempts are made to promote the people in my
work unit who do good work.   1 2 3 4 5 6

61. People in my work unit receive promotions
because they earned them.   1 2 3 4 5 6

62. Supervisors in my work unit give credit to people
when they do a good job.   1 2 3 4 5 6

63. There are penalties for people in my work unit
who do not perform well.   1 2 3 4 5 6

64. There is quick recognition for people in my
work unit for outstanding performance by an
individual or team.   1 2 3 4 5 6

---

65. People in my work unit know who their
customers are.   1 2 3 4 5 6

66. People in my work unit care about our customers.   1 2 3 4 5 6

---

67. There are effective communication channels
between departments in this organization.   1 2 3 4 5 6

68. People in my work unit do not have to rely
on "the grapevine" or rumors for information.   1 2 3 4 5 6

69. People in my work unit have ample opportunity
to exchange information with their supervisors. 1 2 3 4 5 6

70. People in my work unit get the facts and the
information they need to do a good job.   1 2 3 4 5 6

Appendix I
Authorization Letters

From: Commander, National Naval Medical Center, Bethesda, MD
To: LT Wynett A. Isley, MSC, USN, 19-50-7378/2300, Naval
        School of Health Sciences, Building 141, NNMC, Bethesda, MD

Subj: AUTHORITY TO USE EXISTING DATA

Ref: (a) Your Ltr of 21 May with end

1. Permission is granted to use the data gathered by the Naval
Medical Quality Institute during the week of 13 March as
requested in reference (a).

2. Request you provide your analysis as discussed in reference
(a) to the Head, Manpower Management Department.

D. F. HAGEN

Copy to:
CO, NSHS Bethesda

FIRST ENDORSEMENT on LT Wynett A. Isley ltr of 21 May 1991

From: Commanding Officer, Naval School of Health Sciences,
        Bethesda
To: Commander, National Naval Medical Center, Bethesda,
        MD 20889-5001

Subj: REQUEST FOR USE OF EXISTING DATA

1. Forwarded, for your consideration.

K. D. Gibson
K. D. GIBSON

Naval School of Health Sciences
Building 141
Bethesda, Maryland 20089-5033

21 MAY 1991

From: LT Wynett A. Isley, MSC, USN, 179-50-7378/2300
To: Commander, National Naval Medical Center,
      Bethesda, MD 20889-5000
Via: Commanding Officer, Naval School of Health
      Sciences, Building 141, Bethesda, MD 20889-5033

Subj: REQUEST FOR USE OF EXISTING DATA

Encl: (1) Climate version of the Self-Assessment Guide

1. It is very respectfully requested that I be permitted
to retrieve and analyze data collected by the Naval
Medical Quality Institute from your senior leadership
during the week of 13 March 1991. These data have no
personal identifiers; participation in the data
collection was voluntary.

2. In partial fulfillment of the requirements for a
Master's degree in Healthcare Administration, I am
undertaking a descriptive analysis of the Organizational
Climate for Quality in the health care setting, under the
direction of the Baylor University Graduate Program
faculty. This analysis is an attempt to quantify the
status quo and provide baseline data for future research
in Total Quality Leadership. As the flagship hospital
for Navy medicine, the National Naval Medical Center is
an excellent candidate for this baseline research.

3. The Department of Defense Productivity Program Office
has given blanket permission for internal use of the
Quality and Productivity Self-Assessment Guide for
Defense Organizations. This self-assessment tool has
been found to be reliable in measuring the perceptions of
individuals regarding their organization and its quality
climate. A copy of the Climate version of the
Self-Assessment Guide has been enclosed for your
information (enclosure (1)).

4. Favorable consideration of this request would be most
appreciated. If you desire, the results of my analysis
will be provided to you or your designated point of
contact within one month of receipt of permission to use
the requested data. I can be reached at extension 5-1204
or extension 5-0385.

Very respectfully,

Wynett A. Isley

APPENDIX J

GLOSSARY

Brainstorming: a tool used with multiple participants for creating as many ideas as possible in as short a time as possible.

Breakthrough: a decisive change that brings about a new, higher level of performance.

Champion: executive management members who sponsor early quality improvement efforts.

Checksheet: a tool used for gathering empirical data.

Common Cause: an occurrence that can be controlled by modifying the process.

Cost of Poor Quality: the costs incurred by rework and inefficiency.

Cost of Quality: investing the time and resources to plan, provide training and implementing quality improvement systems.

Customer: any individual affected by a work process

Customer Requirements: the customer's needs and reasonable expectations that are focused, measurable, and agreed upon.

Defect: not meeting customer requirements.

Effect: the noticeable symptom of a problem.

Empowerment: enabling employees to study and resolve problems that directly affect their work area using quality improvement processes.

Facilitator: the coach who guides a process team through the problem solving process and who makes sure the total quality tools and techniques are used correctly. Also stimulates the team leader in team building and overcoming barriers.

Feedback: communication of data to sources which

can take appropriate action.

Ishikawa Diagram: a visual tool for generating possible causes to explain an observed effect.

Pareto Chart: a measurement tool used to identify and focus on the vital few factors that most greatly impact a situation.

Pareto Principle: 80% of the problem is caused by 20% of the factors involved; 80% of anything is usually focused into the top 20% (the vital few).

Problem: an area that needs to be improved.

Process Capability: statistically, when a process is within its upper and lower control limits (six sigma boundaries).

Process Flow Chart: a step by step sequencing of events to detail a process.

Process Team: special focus teams made up of six to eight individuals with profound knowledge and experience of the process to be improved.

Quality: a clear understanding of customer requirements with a process that consistently meets those requirements.

Quality Control: a managerial process which includes evaluating actual quality performance, comparing actual performance to quality goals, and taking action on the variance.

Quality Council: a committee of upper managers having the responsibility to establish, coordinate and oversee managing for quality.

Quality Planning: the activity of determining customer needs and developing the processes and products to meet those needs.

Requirements: specifications to which the service or product conforms.

Rework: performing a procedure again because the

original results were not recorded, were lost or were unuseable.

Root Cause: a major contributor to the problem.

Special Cause: an occurrence over which the system has no control.

Supplier: those individuals whose output becomes our input.

Symptom: the noticeable effect of a problem.

Tampering: changing a process to eliminate symptoms without affecting the root cause.

The 80/20 Rule: same as the Pareto Principle. Management may interpret this as: 80% of the problems within an organization can be attributed to the systems; the remaining 20% to the people.

Variation: the degree to which a process fluctuates.

Work Process: the step by step procedure followed in performing assigned tasks.